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THE
Gentleman's Diary,
OR THE
MATHEMATICAL REPOSITORY;
An ALMANACK
For the YEAR of our LORD 1750.

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— Quâ causâ argentea Phœbe
Passibus haud æquis graditur; cur subdita nulli
Haftenus Astronomo numerorum fræna recusat:
Cur remeant Nodi, curque Auges progrediuntur.
— Quantis reslium vaga Cyathia pontum
Viribus impellit; dum fractis fluctibus ulvam.
Deferit, ac Nautis suspectas nudat arenas,
Alternis vicibus suprema ad littora pulsans.

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JANUARY hath xxxi Days.

	M	Day	Sun's
	D	Breaks.	Decl.
First Quarter	4	Day at 3 in the Morning	615 49 20 S 44
Full Moon	11	Day at 1 in the Afternoon	125 43 19 25
Last Quarter	19	Day at 5 in the Afternoon	185 36 17 54
New Moon	26	Day at 9 at Night	245 28 16 17
			315 15 13 59

	M	Day	toes	Sout.	Sets
1	T	Circumcilion. New Years Day	head	4 A 26	11 23
2	W	Expect cold weather. Frost and Snow	face	5 17	Morn.
3	T	Days inc. and Ni. shorten 33 m.	neck	6 8	0 47
4	F	Shorting. Epiph. Fair is al.	thro	7 2	2 3
5	S	ways the 1st Fr. aft. Jan. 2.	arms	7 57	3 21
6	G	Epiph. CHRIST's Star appears	shou	8 53	4 30
7	M	1 Sund. aft. Epip. [to Gentiles	brea	9 48	5 35
8	T	Now perhaps more	stom	10 41	6 22
9	W	Days inc. and Night dec. 50 m.	heart	11 32	7 3
10	T	mild and not very	back	Morn.	Rises
11	F	unpleasant for the Season.	bow	0 19	5 A 41
12	S	Days 8 ho. and a quarter long	belly	1 3	6 55
13	G	Hilary	reins	1 45	8 0
14	M	2 S. aft. Epiph. P. Edw. born	loins	2 26	9 5
15	T	Oxf. Hil. and Cam. L. T. beg.	secre	3 5	10 13
16	W	Cold winterly	and	3 46	11 22
17	T	and wet Weather	blad.	4 28	Morn.
18	F	Da. inc. and N. dec. 1 h. 18 m.	hips	5 13	0 33
19	S	about the middle.	and	6 0	1 41
20	G	Prince Wales born Oct. Hil. 1. R.	thig.	6 50	2 50
21	M	3 Sund. after Epiph St. Agnes	kne.	7 45	3 56
22	T	Still expect Sleet	and	8 4	4 53
23	W	Hilary Term begins	ham.	9 40	5 40
24	T	but perhaps more inclin'd	legs	10 38	6 17
25	F	St. Paul's Conversion	ank.	11 34	Sets
26	S	to Frost towards the End.	feet	0 A 30	6 A 1
27	G	Quind. Hill. 2 Ret.	toes	1 21	7 30
28	M	4 Sunday after Epiphany	head	2 13	8 58
29	T	[Whitehall 12' past 1, 1648-9	and	3 6	10 24
30	W	K. CHARLES I. martyr'd at	face	3 59	11 48
31		Days 9 hours and an half long			

M	Sun	Sun	Watch.	Saturn	Jupiter	Mars	Venus	Mercur.
D	Rises.	Sets.	too fast	Rises.	Sets.	Sets.	Sets.	South.
6	8	1 3	59 11	6	3 M 33 9 A 32	10 A 17	8 A 30	0 A 11
12	7	52 4	8 12	30	3 99	12 10 16	3 40	0 26
18	7	42 4	18 13	45	2 46 3	55 10 16	8 51	0 42
24	7	31 4	29 14	32	2 26 3	37 10 15	9 0	1 0
31	7	17 4	43 14	48	1 44 3	19 10 15	9 5	1 7

FEBRUARY hath xxviii Days.

	M	Day	Sun's
	D	Breaks	Declin.
First Quarter 2 Day at 1 in the Afternoon	6	5 41	11 S 56
Full Moon 10 Day at 7 in the Morning	12	4 54	9 46
Last Quarter 18 Day at 10 in the Morning	18	4 40	7 31
New Moon 25 Day at 7 in the Morning	24	4 29	5 13
	28	4 19	3 38

Sundays, Holy Days, remarkable Days, Length, Incr. and Decr. of Days, Terms, Returns, Weather, &c.	Moon Signs	Moons Rising & Sett.	Moons South-ing.
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1 T Not much Alteration at present	neck	Morn.	4 A 52
2 F Candlemas Day Purificat. B. V.	thro.	1 3	5 49
3 S Craft. Purif. 3 Ret.	arms	2 10	6 45
4 G 5 Sunday after Epiphany	sho.	3 25	7 41
5 M Days increas'd 2 hours and half	brea.	4 18	8 36
6 T expect wet, and still	sto.	5 0	9 26
7 W Days 9 hours and 53 min. long	heart	5 36	10 14
8 T cold, dirry, and	back	6 2	10 59
9 F Octab. Purif. 4 Return	bow	Rises	11 42
10 S winterly Weather.	and	5 A 45	Morn.
11 G Septuagesima Sund, Quomodo	belly	6 54	0 24
12 M	reins	8 2	1 4
13 T Still cold and	and	9 10	1 44
14 W Valentine	loins	10 21	2 27
15 T Days incr. 2 ho. 10 min.	seer.	11 29	3 15
16 F more inclin'd	blad.	Morn.	3 56
17 S to Frost.	hips	0 41	4 45
18 G Sexagesima Sunday	and	1 43	5 36
19 M Now Sleet, Rain,	thig.	2 42	6 31
20 T or Snow, with	knee	3 35	7 27
21 W rough Winds may	ham.	4 13	8 23
22 T Princess of HESSE born	legs	4 44	9 19
23 F be expected.	ankl.	5 10	10 13
24 S Days 11 h. 4 min. long	feet	5 32	11 8
25 G Quinquagesima or Shrove Sund.	and	Sets	0 A 1
26 M Now more pleasant.	toes	7 A 57	0 55
27 T Shrove Tuesday	head	9 23	1 50
28 W Ash Wednesd. first Day of Lent	face	10 50	2 46

M	Sun	Sun	Watch	Satura	Jupiter	Mars	Venus	Mercur.	
D	Rises.	Sets.	too fast.	Rises.	Sets.	Sets.	Sets.	South.	
6	7	4	4 56	14 38	1 M 28	8 A 1	10 A 17	9 A 11	0 A 53
12	6	51	5 9	13 52	1 10	7 44	10 18	9 15	0 36
18	6	40	5 20	12 48	0 50	7 32	10 18	9 4	11 M 32
24	6	27	5 33	11 27	0 30	7 18	10 19	8 57	11 13
28	6	20	5 40	10 22	0 17	7 7	10 20	8 40	10 42

MARCH hath xxxi Days | M | Day | Sun's
| 2 | Breaks. | Declin.

MARCH hath xxxi Days		M	Day	Sun's
		5	Breaks.	Declin.
First Quarter	3 Day at 12 at Night	6	4	41 S 17
Full Moon	12 Day at 1 in the Morning	12	3	50 N 5
Last Quarter	19 Day at 12 at Night	18	3	35 S 27
New Moon	26 Day at 4 in the Evening	24	3	19 S 45
		31	2	58 S 22

1	T	St. David. Cam. Comm. for neck	Morn.	3	A	44
2	F	Chad B. [Batch. of Art. thro.	0	10	4	42
3	S	Let the Wind now blow arms	1	18	5	40
4	G	1 Sun. in Lent. Quadragesima sho.	2	20	6	37
5	V	from any of the Points brea.	3	3	7	27
6	T	Day 11 ho. 48 min. long and	3	39	8	17
7	W	Ember Week stom	4	6	9	3
8	T	Cyprian heart	4	25	9	46
9	F	enters 19 at 4h. 57 m. After back	4	43	10	28
10	S	Equal Day and Night in all hab bow	5	6	11	9
11	G	2 S. in Lent [Parts of the world and	Rises	11	50	
12	M	Days incr. 4 h. 54 min. belly	7	A	5	Morn.
13	T	Whether it be wet or dry reins	8	15	0	32
14	W	Prince EDWARD born loins	9	25	1	15
15	T	frosty or mild, secr.	10	33	2	0
16	F	expect March Winds blad.	11	39	2	48
17	S	Days 12 ho. and half long hips	Morn.	3	38	
18	G	3 Sunday in Lent thigh.	0	41	4	31
19	M	and a pretty seasonable kne.	1	32	5	25
20	T	Cuthbert and	2	14	6	19
21	W	Days incr. 5. h. and an half ham	2	51	7	14
22	T	time for casting the legs	3	19	8	8
23	F	Seed into the Ground: ankl.	3	45	9	1
24	S	Days 13 hours long feet	4	10	9	54
25	G	4 Sund. or Midlent S. Lady D. and	4	29	10	47
26	M	therefore while the toes	Sets	11	41	
27	T	Season holds good head	8	A	27	0 A 38
28	W	we desire Farmers and	9	48	1	36
29	T	Cam. latter Act face	11	8	2	36
30	F	to be diligent. neck	Morn.	3	35	
31	S	Days 13 hours and an half long thro.	0	13	4	34

M	Sun	Sun	Watch	Saturn	Jupiter	Mars	Venus	Mercur.		
D	Rises.	Sets.	too fast.	Rises.	Sets.	Sets.	Sets.	South.		
6	6	7	53	8	40	11 A 55	6 A 54	10 A 24	8 A 22	10 M 30
12	5	55	6	56	50	11 32	6 45	10 27	Rises	10 20
18	5	42	6	18 4	58	11 10	6 36	10 29	4 M 54	10 21
24	5	30	6	30 3	7	10 44	Rises	10 30	4 30	10 28
31	5	16	6	44 1	5	10 18	5 M 12	10 31	4 7	10 36

APRIL hath xxx Days.

M	Day	Sup's
D	Break.	Decl.

First Quarter 2 Day at 2 Afternoon

Full Moon 10 Day at 6 in the Evening

Left Quarter 18 Day at 10 in the Morning

New Moon 25 Day at 1 in the Morning

63	40	10N	27
122	20	12	34
181	47	14	30
241	32	16	17
300	55	17	55

1	G	Sund. in Lent. All Fools Day	arms	1 M	4	5	A	29
2	M	<i>Expect this Month to</i>	sho.	1	45	6		21
3	T	Days increas'd 6 h. 25 min.	brea.	2	16	7		8
4	W	<i>begin with dry cold</i>	from	2	39	7		53
5	T	<i>Weather for some Days.</i>	heart	2	58	8		35
6	F	Day 14 hours long	back	3	15	9		16
7	S	Dr. and Cam. Terms end	bow	3	30	9		57
8	G	6 Sunday in Lent. Palm Sund.	belly	3	45	10		38
9	M	<i>Now more moist</i>	reins	4	0	11		21
10	T	<i>and showery, but</i>	loins	) Rifles		Morn.		
11	W	<i>not without brisk Winds.</i>	secr.	8 A	30	0		5
12	T	Maunday Thursday	blad.	9	37	0		52
13	F	GOOD FRID. Our SAV.	hips	10	41	1		42
14	S	Prince WILLIAM born the 15th	thig.	11	36	2		34
15		EASTER DAY, Our SAV. Ref.	knee	Morn.		3		28
16	M	Easter Monday	and	0	28	4		22
17	T	Easter Tuesday	ham	0	55	5		15
18	W	<i>Fine springing Weather</i>	legs	1	24	6		7
19	T	Days increas'd 7h. 27m.	ankl.	1	46	6		59
20	F	<i>about the Middle.</i>	feet	2	8	7		49
21	S	☉ rising Ampl. 26°. 19' North	and	2	30	8		30
22	G	1 Sund. after Easter; Low Sund	toes	2	52	9		31
23	M	S. George Fav. of Ch. and Fort.	head	3	13	10		26
24	T	Dr. and Cam. East. Terms b	face	3	34	11		23
25	W	St. MARK the Evan [the 25th	neck	Sets		0 A		23
26	T	<i>Now expect fruitful</i>	and	10 A	0	1		24
27	F	Days 15 hours and a quarter	thro.	11	0	2		23
28	S	<i>Showers, and fine spring Weather.</i>	arms	11	46	3		22
29	G	2 Sunday after Easter	sho.	Morn.		4		16
30	M	Quin. Pasch. 1 Ret.	brea.	0	21	5		6

M D	Sun Rifes.	Sun Sets.	Watch tooflow.	Saturn Rifes.	Jupiter Rifes.	Mars Sets.	Venus Rifes.	Mercur. South.														
6	5	3	6	57	0	29	9	A	54	4	M	52	10	A	30	3	M	54	10	M	51	6
12	4	52	7	8	1	48	9	31	4	30	10	29	3	43	11	6						
18	4	40	7	21	2	52	9	7	4	12	10	28	3	29	11	27						
24	4	30	7	30	3	35	8	43	3	52	10	27	3	16	11	48						
30	4	18	7	42	4	0		Sets.	3	31	10	25	3	4	0	A	27					

MAY hath xxxi Days.

M Day Sun's
D Breaks Decl.

First Quarter 2 Day at 6 in the Morning
Full Moon the 10 Day at 8 in the Morning
Last Quarter 17 Day at 5 in the Evening
New Moon 24 Day at 9 in the Morning
First Quarter 31 Day at 10 at Night.

6		19	N 21
12	No	20	37
18	real	21	40
24	Night.	22	28
31		23	7

1	T	St. PHILIP and JACOB	stom	0 A 48	5	A 53
2	W	Easter Term begins	heart	1 6	6	36
3	T	Now expect Winds	back	1 21	7	17
4	F	Days increas'd and Nights	bow	1 39	7	58
5	S	shorten'd 8 h. 22 min.	belly	1 57	8	39
6	G	3 Sunday after Easter	reins	2 9	9	20
7	M	Tres Pasch. 2 Return	loins	2 26	10	4
8	T	but not very cold.	seer.	2 47	10	50
9	W	☉ due E. 7 morn. Alt. 25° 28'	blad.	3 2	11	39
10	T	Days 15 h. 54 min. long	hips	☾ Rises	Morn.	
11	F	Now more showry,	thig.	9 A 31	0	31
12	S	but a fine pleasant	kne.	10 18	1	24
13	G	4 Sunday after Easter	ham	10 59	2	18
14	M	Mens. Pasch. 3 R. Westm. El.	legs	11 27	3	12
15	T	fruitful Season for	ankl.	11 56	4	5
16	W	the Spring about	feet	Morn.	4	55
17	T	the Middle.	toes	0 15	5	45
18	F	Day 16 ho. and a quarter	head	0 30	6	30
19	S	Windy, but mostly	face	0 52	7	24
20	G	5 Sun. after Easter, Rogat. S.	neck	1 13	8	15
21	M	Quin. Pasch. 4 Ret.	thro.	1 37	9	9
22	T	fair and pleasant	arms	2 6	10	6
23	W	Rogation Week	sho.	2 48	11	5
24	T	Holy Thurfd. CHR. Ascens. Pr	brea.	Sets	0 A 5	
25	F	Craft. Asc. 5 Ret. [GEO. born	stom	9 A 33	1	5
26	S	now and to the End.	heart	10 16	2	1
27	G	Sunday after Ascension	back	10 45	2	54
28	M	Easter Term ends	bow	11 10	3	43
29	T	K. Charles II. Birth and Return	belly	11 31	4	28
30	W	Prs. AMEL. and CAROL. born	reins	11 50	5	10
31	T	Dr. and Cam. Terms end	loins	12 18	5	51

M	Sun	Sun	Watch	Saturn	Jupiter	Mars	Venus	Mercur.
D	Rises.	Sets.	too slow.	Sets.	Rises.	Sets.	Rises.	South.

6	4	9	7	51	4	2	4	M 36	3	M 10	10	A 20	2	M 57	0	A 48
12	4	0	8	0	3	46	4	10	2	48	10	14	2	44	1	9
18	3	53	8	7	3	9	3	44	2	27	10	8	2	27	1	28
24	3	47	8	13	2	17	3	17	2	5	10	0	2	14	1	40
31	3	42	8	18	1	0	2	49	1	39	9	48	2	0	1	45

JUNE hath xxx Days.

M	Day	Sun's
D	break.	Decl.

Full Moon 8 Day at 9 at Night
 Last Quarter 15 Day at 9 at Night
 New Moon 22 Day at 7 at Night
 First Quarter 30 Day at 3 Afternoon

6		23 25
12	All	23 28
18	Twilight.	23 17
24		22 50
30		22 0

1	I	Fine pleasant Weather,	seer.	OM	18	0	A	32
2	:	but not without	cods	0	32	7		13
3	G	WHIT SUNDAY	blad.	0	46	7		55
4	M	Whit-Monday	hips	0	59	8		40
5	T	Whit-Tuesday	and	1	15	9		28
6	W	Ember Week	thig.	1	38	10		18
7	T	some refreshing Showers.	kne.	2	15	11		11
8	F	Day 16 h. 42 min. long	and	D	Rises		Morn.	
9	S	enters 10 D. 3 h. 56 m. in	ham	8	A	53	0	6
10	G	Trinity Sund. [the Afternoon	legs	9	33	1		1
11	M	BARN. K. GEO. II. Ina. Craft.	and	9	56	1		55
12	T	Trin. iter. Trin. Col. Dr. El.	ankl.	10	17	2		49
13	W	Oxford Term begins	feet	10	38	3		39
14	T	Corpus Christi Day	toes	11	0	4		28
15	F	K. GEO. II. procl. Trin. Term b.	head	11	18	5		16
16	S	Now expect some	and	11	43	6		6
17	G	1 Sunday after Trinity	face	11	59	6		58
18	M	Ost. b. Trin. 2 return	neck		Morn.	7		51
19	T	brisk Gales of Wind,	and	0	34	8		47
20	W	☉ due E. 7 h. 15'. Alt. 29°. 28'	thro.	1	18	9		47
21	T	Days decreas'd 6 min.	arms	2	9	10		46
22	F	and perhaps some	thou.		Sets	11		44
23	S	hasty Thunder Showers. [sum. D	brear.	8	A	40	0	A
24	G	2 S. aft. Tr. S. JOHN Bapt. Mid	tom	9	5	1		29
25	M	2u Tr. 3 ret. S. Joh. C. Dr. E	ibs	9	26	2		17
26	T	Fair and pleasant	hear	9	47	3		0
27	W	but inclined to Wind	back	9	56	3		40
28	T	now and to the End.	bow	10	12	4		22
29	F	St. PETER and St. PAUL	belly	10	29	5		3
30	S		eing	10	45	5		40

M	Sun	Sun	Watch	Saturn	Jupiter	Mars	Venus	Mercu
D	Rises.	Sets.	too fast.	Sets.	Rises.	Sets.	Rises.	South.
6	3	39	8	21	0	15	2	M 24
12	3	39	8	21	1	58	0	53
18	3	40	8	20	2	47	0	30
24	3	41	8	16	3	5	0	6
30	3	48	8	12	4	50	0	39

JULY hath xxxi Days.

	M	Day	Sun's
	D	Breaks	Declin.
Full Moon 8 Day at 7 in the Morning	6	No real	21 14
Last Quarter 15 Day at 2 in the Morning	12	Night.	20 18
New Moon 22 Day at 6 in the Morning	18	0	12 18 48
First Quarter 30 Day at 3 in the Morning	24	1	7 17 18
	31	1	44 15 16

1	G	Sunday after Trinity	oins	11 A	6	6 A	28
2	M	Tres Trin. 4 ret. Exeter C. El	tecr.	11	30	7	17
3	T	Cambridge Commencement	and	11	58	8	4
4	A	Trinity Term ends	lad.	Morn.		8	57
5	I	☉ due E 7h. 9m. Alt. 27° 20'	hips	0	49	9	51
6	T	Days 16 hours 9 min. long	thig.	1	48	10	46
7	S	Thomas a Becket	ham	2	50	11	40
8	G	Sunday after Trinity	kne.	D Rises		Morn.	
9	M	Windy, with sudden Showers,	legs	8 A	17	0	35
10	T	and probably much Thunder	ankl	8	38	1	28
11	W	Days decreas'd and Nights	feet	8	57	2	18
12	T	lengthen'd 50 min.	toes	9	18	3	8
13	F	and lightning.	head	9	40	4	0
14	S	[of Winchester	face	10	2	4	51
15	G	Sund. aft. Trin. S within Bp.	neck	10	33	5	43
16	M	☉ Ampl. 33°. 10'	and	11	12	6	39
17	T	Hot and sultry	thro.	11	59	7	37
18	W	Days 15 hours 36 min. long	arms	Morn.		8	35
19	T	Dog-days begin	thou.	1	1	9	33
20	F	Now, and towards	brea.	2	7	10	30
21	S	the End expect fine	and	3	17	11	20
22	G	Sunday after Trinity	stom	Sets		0 A	7
23	M	☉ due E. 6h. 55m. Alt. 22°. 4'	heart	7 A	46	0	52
24	T	Magdalen College Election	back	8	2	1	35
25	W	St. JAMES the Apostle	bow	8	21	2	17
26	T	seasonable weather	belly	8	37	2	59
27	I	Days decreased and Nights	reins	8	54	3	40
28	A	lengthened 1 hour 42 min.	and	9	11	4	22
29	G	Sunday after Trinity	kins	9	31	5	8
30	M	for the Harvest.	tecr.	10	10	5	56
31	T	Prs. AUGUSTA born	bled.	10	45	6	44

M	Sun	Sun	Watch	Saturn	Jupiter	Mars	Venus	Mercur.			
D	Rises.	Sets.	too fast.	Sets.	Rises.	Sets.	Rises.	South.			
6	3	55	8	5	31	0 M 13	11 A 21	8 A 37	1 M 10	10	5
12	4	3	7	57	5	53	11 A 49	10 59	8 17	1 8	10 39
18	4	12	7	48	5	54	11 28	10 37	8 2	1 10	10 42
24	4	21	7	40	5	34	11 4	10 17	7 48	1 12	10 29
31	4	34	7	26	4	41	10 37	9 49	7 30	1 25	11 21

AUGUST hath xxxi Days.

	M. Day	Sun's
	D Breaks.	Decl.
Full Moon 6 Day at 4 Afternoon	6 2	7 13 N 23
Last Quarter 13 Day at 8 in the Morning	12 2	27 11 28
New Moon 20 Day at 8 at Night	18 2	47 9 23
First Quarter 28 Day at Midnight	24 3	5 7 12
	31 3	25 4 34

1	W	Lammas Day	bias	11	A 32	7	A 38
2	T	Still expect fine	hip		Morn.	8	32
3	F	seasonable Weather	thig	0	33	9	28
4	S	for the Harvest.	kne	1	44	10	23
5	G	8 Sunday after Trinity	and	2	58	11	17
6	M	Days decreas'd and Nights in	ham	☾	Rises	Morn.	
7	T	creas'd 2 hours and a quarter	legs	7	A 4	0	10
8	W	☉ due East 6h. 36'. Alt. 15° 10'	ankl	7	24	1	2
9	T	Days 14 hours and a quarter	feet	7	47	1	54
10	F	Now perhaps	toes	8	12	2	48
11	S	some Thunder Showers	head	8	40	3	43
12	G	9 Sunday after Trinity	and	9	15	4	39
13	M	but windy, and not	face	10	3	5	35
14	T	much Downfall.	neck	11	1	6	34
15	W	Days decreased, and Nights	thro	11	59	7	32
16	T	increas'd 2 h. 50 m.	arms		Morn.	8	27
17	F	☉ Amplitude 16° 5'	sho	1	17	9	18
18	S	More inclin'd to Wet	brea	2	24	10	7
19	G	10 Sunday after Trinity	flom	3	34	10	54
20	M	now for some Days,	ribs		Sets	11	38
21	T	Days 13 h. and half long	hear	6	A 32	0	A 20
22	W	☉ Ampl. 13° 6'	back	6	48	1	2
23	T	but towards the	bow	7	5	1	44
24	F	St. BARTHOLOMEW Apostle	belly	7	26	2	26
25	S	End more seasonable	reins	7	47	3	11
26	G	11 Sunday after Trinity	loin	8	11	3	57
27	M	Dog Days end	seer	8	46	4	45
28	T	fair and pleasant	blad	9	30	5	36
29	W	☉ Due E. 6 h. 16 m. Alt. 6° 28'	hips	10	28	6	29
30	T	Days decreas'd, and Nights	thig	11	29	7	22
31	F	increas'd 3 h. 54 min.	kne		Morn.	8	16

M.	Sun	Sun	Watch	Saturn	Jupiter	Mars	Venus	Mercur.
D.	Rises.	Sets.	(too fast.)	Sets.	Rises.	Rises.	Rises.	South.
6	4 45	7 15	3 38	10 A 15	9 A 27	4 M 40	1 M 30	11 M 47
12	4 57	7 22	2 15	9 54	9 5	4 41	1 46	0 A 8
18	5 8	6 51	0 36	9 33	8 44	4 41	2 3	0 30
24	5 20	6 40	slow 16	9 10	8 22	4 42	2 20	0 58
31	5 35	6 25	3 37	8 46	7 56	4 42	2 42	1 4

OCTOBER hath xxxi Days

	M	Day	Sun's
	D	Breaks	Decl.
Full Moon	4	Day at 10 in the Morning	6 4 49 9 5 18
Last Quarter	11	Day at 5 in the Morning	12 5 20 11 27
New Moon	19	Day at 6 in the Morning	18 5 11 13 32
First Quarter	27	Day at 4 in the Morning	24 5 22 15 27
	31		31 5 33 17 30

1	M	Now Winter comes	feet	2	M	30	9	A	42
2	T	on, we may expect	toes	3		51	10		35
3	W	Days decreas'd 6 ho. 12 min.	head	5		20	11		30
4	T	the Weather to be	and		Rises			Morn.	
5	F	sometimes fair and	face	5	A	27	0		27
6	S	Days 10 hours 19 min. long	neck	6		8	1		28
7	G	7 Sunday after Trinity	thro.	7		1	2		29
8	M	sometimes foul, but	arms	8		0	3		30
9	T	St. Dionysius	and	9		8	4		29
10	W	Oxf. and Camb. Terms begin	shou	10		19	5		25
11	T	King George II. Crowned	brea.	11		32	6		17
12	F	not extraordinary hot;	stom		Morn.		7		5
13	S	however its likely	heart	0		51	7		50
14	G	18 Sunday after Trinity	and	1		53	8		33
15	M	Days decreas'd and Nights in-	back	3		0	9		15
16	T	creased 7 hours	bow	4		8	9		56
17	W	enough (we hope) for	belly	5		15	10		38
18	T	St. Luke the Evangelist	reins	6		22	11		21
19	F	a good Seed Time.	and		Sets		0	A	5
20	S	Tres Mich. 1 Return	loins	5	A	8	0		52
21	G	9 Sunday after Trinity	seer.	5		42	1		41
22	M	Princess of ORANGE born	blad.	6		30	2		32
23	T	Michaelmas Term begins	hips	7		25	3		23
24	W	Frosty Mornings	thig.	8		30	4		14
25	T	Crispin	kne.	9		41	5		5
26	F	and not much Downfall,	ham	10		56	5		55
27	S	Mens. Mich. 2 Return	legs		Morn.		6		44
28	G	20 S. af. Trin. S. SIM. and JUNE	ank.	0		14	7		33
29	M	but windy to the End.	feet	1		25	8		23
30	T	K. GEORGE II. born 1683	and	2		42	9		15
31	W	Days 8 h. 41 m. long	toes	4		17	10		10

M	Sun	Sun	Watch	Saturn	Jupiter	Mars	Venus	Mercur.
D	Rises.	Sets.	too slow	Sets.	Rises.	Rises.	Rises.	South.
6	6 50	5 10	14 35	6 A43	5 A42	4 M45	4 M40	1 A10
12	7 2	4 58	15 34	6 23	Sets.	4 44	4 40	0 49
18	7 14	4 4	16 8	6 2	6 M27	4 43	5 1	13 M39
24	7 26	4 33	16 13	5 40	6 c	4 41	5 36	11 1
30	7 40	4 20	15 43	5 14	5 26	4 39	6 10	47

NOVEMBER hath xxx Days. (M) Day Sun's | D Breaks. | Declin.

Full Moon	2 Day at 7 at Night	6 5	41	19 S	3
Last Quarter	9 Day at 8 at Night	12 5	48	20	25
New Moon	18 Day at 1 in the Morning	18 5	54	21	32
First Quarter	25 Day at 2 Afternoon	24 5	59	22	25
		30 6	2	23	2

1	T All Saints	head	5 M	45	11 A	9
2	F All Souls	and	1	Rise	Morn.	
3	S Cr. Anj. 3 R. All S. Col. E.	face	4 A	45	0	9
4	G 21 Sunday after Trinity	neck	5	42	1	11
5	M Gun Powder Plot 1605	thro.	6	47	2	13
6	T Wet, Cold Rain,	arms	7	59	3	12
7	W Sleet or Snow.	sho.	9	15	4	7
8	T Days decreased and Nights	brea	10	28	4	58
9	F increased 8 hours and half	stom	11	39	5	44
10	S Stormy and unpleasant	heart	Morn.	6	28	
11	G 22 S. af. Trin. Martin Bp. of	and	0	47	7	10
12	M Craft. Mart. 4 Return [Tours back		1	54	7	51
13	T winterly Weather.	bow.	2	59	8	32
14	W Prince WILLIAM HENRY born	belly	4	6	9	14
15	T Cold and slabby	reins	5	14	9	58
16	F Day 7 hours 42 min. long	loins	6	20	10	44
17	S but now and towards	seer.	7	25	11	32
18	G 23 Sunday after Trinity	blad.	Sets	0 A	22	
19	M Prs. of WALES born Oct. Mar.	hips	5 A	13	1	13
20	T the End more calm [5 Ret.	thig	6	16	2	4
21	W Days decreased, and Nights in-	kne.	7	24	2	55
22	T creased 9 h. 4 min.	ham	8	39	3	45
23	F and perhaps somewhat	legs	9	55	4	34
24	S inclined to Frost,	and	11	11	5	21
25	G 24 S. aft. Trin. St. Catharine	ankl	Morn.	16	9	
26	M Quin. Mar. 6 Return	feet	0	29	6	58
27	T tho' (likely) some Downfall.	toes	1	48	7	49
28	W Term Ends	head	3	9	8	43
29	T Batiol Coll. Election	face	4	32	9	41
30	F St. ANDREW Apostle	neck	5	53	10	41

M	Sun	Sun	Watch	Saturn	Jupiter	Mars	Venus	Mercur.
D	Rises.	Sets.	too slow	Sets.	Sets.	Rises.	Rises.	South.
6	7 49	4 11	14 44	4 A 1	4 M 59	4 M 35	6 M 19	10 M 50
12	7 58	4 2	13 14	Rises.	4 30	4 32	6 37	10 55
18	8 6	3 54	11 17	7 M 41	0 14	30 6	56 11	4
24	8 13	3 47	8 57	7 19	3 33	4 28	7 34	11 17
30	8 18	3 42	6 14	6 54	3 54	2 7	24 11	19

DECEMBER hath xxxi Days.

	M	Day	Sun's
	D	breaks	Decl.
Full Moon 2 Day at 7 in the Morning	6	6	423 24
Last Quarter 9 Day at 3 Afternoon	13	6	323 29
New Moon 17 Day at 6 at Night	18	6	323 16
First Quarter 24 Day at 11 at Night	24	6	322 46
Full Moon 31 Day at 7 at Night	31	5	56 21 51

1	S	Frosty, and not	thro.	Aftern.	11	A	42
2	G	Advent Sunday	arms	4	17	Morn.	
3	M	very unpleasant	and	5	28	0	43
4	T	for the Season.	sho.	6	40	1	42
5	W	☉ greatest Amp. at Lo. 39° 50'	brea.	7	57	2	35
6	T	at NOTTINGHAM 41° 28'	stom	9	8	3	25
7	F	Princess of DENMARK born	heart	10	17	4	14
8	S	The greatest shortning of Days	back	11	26	4	54
9	G	2 Sunday in Advent	bow	Morn.	5	36	
10	M	Sun enters v ⁹ 9h. 1m. at Night	belly	0	31	6	17
11	T	Shortest Day at NOTTINGHAM	reins	1	42	6	58
12	W	is 7h. 18. at LOND. 7h. 35m.	loins	2	48	7	41
13	T	at LONDON is 8 h. 50 min.	seer.	3	54	8	26
14	F	at NOTTINGHAM 9h. 24m.	blad.	5	1	9	13
15	S	Now expect winterly	hips	6	2	10	2
16	G	3 Sunday in Advent	and	6	58	10	53
17	M	Orf. and Cam. Terms end	thig.	7	Sets	11	45
18	T	Weather, cold Rains,	knee	5	A	0	37
19	W	Ember Week	ham	6	12	1	27
20	T	Sleet or Snow,	legs	7	29	2	17
21	F	St. THOMAS, Apostle	ankl.	8	46	3	6
22	S	but perhaps more inclin'd	feet	10	3	3	55
23	G	4 Sunday in Advent	toes	11	21	4	43
24	M	Days increas'd 12 minutes	head	Morn.	5	32	
25	T	CHRISTMAS Day	face	0	42	6	25
26	W	St. STEPHEN Proto-Martyr	neck	2	1	7	18
27	T	St. JOHN Evangel	thro.	3	20	8	16
28	F	Innocents, or Herod's Murd. Inf.	arms	4	36	9	14
29	S	to Frost to the End. [ELIZ. born	sho.	5	42	10	14
30	G	1 Sund. after Christm. Princess	brea.	6	41	11	13
31	M	Days 7h. 42m. long. incr. 25m.	stom	7	33	12	8

M	Sun	Sun	Watch	Saturn	Jupiter	Mars	Venus	Mercury
D	Rises.	Sets.	too slow	Rises.	Sets.	Rises.	Rises.	South.
6	8 21	3 39	3 20	6M30	2M39	4M21	7M41	11M41
12	8 21	3 39	0 20	6 7	2 13	4 16	7 56	11 56
18	8 20	3 40	2 fa: 54	5 50	1 46	4 11	7 58	0 A 11
24	8 16	3 44	5 30	5 27	1 20	4 7	8 2	0 26
31	8 0	3 51	8 30	4 50	0 52	3 56	Sets.	0 45

A TABLE of all the Kings and Queens of England since the Conquest.

The Year of the Birth of each King and Queen; also the Year, Month, and Day, whereon they began to reign: beginning the Year the first Day of January, 1750.				The Length of each Reign.			The Years expired since each Reign began and ended.	
Names.	Born.	Began to Reign.	Y. M. D.	Beg	End			
William Conq.	1027	1066 October 14	20 10 26	684	663			
William Rufus	1057	1087 Septem. 5	12 10 24	563	650			
Henry I.	1058	1100 August 2	35 4 0	650	615			
Stephen	1105	1135 Decem. 1	18 10 24	615	596			
Henry II.	1134	1154 October 25	34 8 11	596	561			
Richard I.	1156	1189 July 6	9 9 0	561	551			
John	1166	1199 April 6	17 6 13	551	534			
Henry III.	1207	1216 October 19	36 1 0	534	478			
Edward I.	1239	1272 Novem. 16	34 7 21	478	443			
Edward II.	1284	1307 July 7	19 6 13	443	423			
Edward III.	1312	1327 January 20	50 5 1	423	373			
Richard II.	1366	1377 June 21	22 3 8	373	351			
Henry IV.	1367	1399 Septem. 29	13 5 21	351	337			
Henry V.	1389	1413 March 20	9 5 11	337	328			
Henry VI.	1421	1422 August 31	38 6 4	328	289			
Edward IV.	1442	1461 March 4	22 1 5	289	267			
Edward V.	1471	1483 April 9	0 2 13	267	267			
Richard III.	1443	1483 June 22	2 2 0	267	265			
Henry VII.	1457	1485 August 22	23 8 0	265	241			
Henry VIII.	1492	1509 April 22	37 9 6	241	203			
Edward VI.	1537	1547 January 28	6 5 8	203	197			
Mary I.	1516	1553 July 6	5 4 11	197	192			
Elizabeth	1533	1558 Novem. 17	44 4 7	192	147			
James I.	1566	1603 March 24	22 0 3	147	125			
Charles I.	1600	1625 March 27	23 10 3	125	101			
Charles II.	1630	1649 January 30	36 0 7	101	65			
James II.	1633	1685 February 6	4 0 7	65	61			
Mary II.	1662	1689 Feb. 13	5 10 15	61	56			
William III.	1650		13 0 23	61	48			
Anne	1665	1702 March 8	12 4 24	48	36			
George I.	1660	1714 August 1	12 10 10	36	23			
George II.	1683	1727 June 11	whom God preserve.					

A Compendious TABLE of INTEREST,
 Shewing the Interest of any Sum of Money, from a Million
 to a Pound; for any Number of Days, at any Rate of
 Interest.

N ^o .	l.	s.	d.	q.	N ^o .	l.	s.	d.	q.
1000000—	2739	14	6	0,99	1000—	2	14	9	2,14
900000—	2465	15	0	3,29	900—	2	9	3	3,12
800000—	2191	15	7	1,59	800—	2	3	10	0,11
700000—	1917	16	1	3,89	700—	1	18	4	1,10
600000—	1643	16	8	2,19	600—	1	12	10	2,80
500000—	1369	17	3	0,49	500—	1	7	5	3,70
400000—	1095	17	9	2,79	400—	1	1	11	0,50
300000—	821	18	4	1,09	300—	0	16	5	1,40
200000—	547	18	10	3,40	200—	0	10	11	2,30
100000—	273	19	5	1,70	100—	0	5	5	3,01
90000—	246	11	6	0,32	90—	0	4	11	0,71
80000—	219	3	6	0,96	80—	0	4	4	2,41
70000—	191	15	7	1,59	70—	0	3	10	0,11
60000—	164	7	8	0,22	60—	0	3	3	1,81
50000—	136	19	8	2,85	50—	0	2	8	3,51
40000—	109	11	9	1,48	40—	0	2	2	1,21
30000—	82	3	10	0,11	30—	0	1	7	2,90
20000—	54	15	10	2,74	20—	0	1	1	0,60
10000—	27	7	11	1,37	10—	0	0	6	2,30
9000—	24	13	1	3,23	9—	0	0	5	3,67
8000—	21	18	4	1,10	8—	0	0	5	1,40
7000—	19	3	6	2,96	7—	0	0	4	2,41
6000—	16	8	9	0,82	6—	0	0	3	3,76
5000—	13	13	11	2,58	5—	0	0	3	1,15
4000—	10	19	2	0,55	4—	0	0	2	2,52
3000—	8	4	4	2,41	3—	0	0	1	3,80
2000—	5	9	7	0,27	2—	0	0	1	1,26
1000—	2	14	9	2,14	1—	0	0	0	2,63

R U L E.

Multiply the Sum by the Number of Days; and that Product by the Rate per Cent. Then cut off the two last Figures to the right Hand, and the rest you must find in the Table.

Example, What is the Interest of 100 l. for 365 Days at 5 per Cent

N ^o . of Days 365	Then in the Table
multiply by 100	against 1000 is 2 14 9 2,14
Product 36500	800 2 3 10 0,11
multiply by 5 Rate p. Cent.	20 0 1 1 0,60
82500	5 0 0 3 1,15
	Ans. 5 0 0 0,00

The ECLIPSES in this Year 1750, by Mr *Hollingworth*.

Five Times the Two great Lights forbear to smile,
On us the Natives of this happy Isle;
Twice *Cynthia* fair, and Thrice the glorious Sun,
Will be eclips'd; and in this Order run:

The first is a visible and total Eclipse of the Moon, on *Friday* the 8th of *June*, at 8 in the Evening.

The second is an invisible one of the Sun, on *Friday* the 22d of *June*, at 7 in the Evening.

The third is also an invisible Eclipse of the Sun, on *Sunday* the 18th of *November*, at 1 in the Morning.

The fourth is an Eclipse of the Moon, on *Sunday* the 2d of *December*, at 6 in the Morning, visible and total.

The fifth and last will be of the Sun, on *Monday* the 17th of *December*, at 6 in the Evening, invisible.

The Times of the two Lunar Eclipses for the following Places, as calculated and sent us by the said Mr *Hollingworth*, and several other ingenious Contributors, we shall exhibit in the following Tables.

The Moon's Eclipse, *June* the 8th, 1750.

	Beg.	Midd.	End	Dur.	Digit
	h. m.	h.	h. m.	h. m.	h. m.
Mr John Hollingworth, London	7 20	9 0	10 41	3 21	15 49
Mr Rob. Robinson { Stockton	7 6	8 55	10 43	3 37	16 14
{ Newcastle	7 5	8 54	10 42		
Mr Ab. Lord, Peckleton in Leicestersh.	7 15	9 2	10 49	3 34	15 43
Mr Benj. Donn { London	7 5	8 52	10 39	3 34	16 0
{ Bideford	6 48	8 34	10 21		
Mr J. Walker Kettering, fr. Brent's Ta.	7 54	8 52	10 40	3 35	16 0
Jery Jinglebrains { Lincoln	7 6	8 53	10 41	3 35	16 1
{ Gainborough	7 5	8 53	10 40		
Mr John Skay	9 27	11 14	1 2	3 35	15 55
	9 2	10 59	12 47		
	8 5	9 52	11 40		
	7 0	8 47	10 35		
Mr Tho. Allen { London	7 2	8 50	10 38	3 37	16 13
{ Barkby	6 57	8 45	10 34		
Mr Sam. Sector for London	7 9	8 57	10 46	3 37	
Mr Char. Mason, { London	7 3	8 51	10 40	3 37	16 12
jun. from Lead- { Jerusalem	9 25	11 13	1 2		
better's Tab. { Sapperton	6 54	8 43	10 32	3 36	16 12
Mr John Ramsay	7 3	8 51	10 39		
	6 56	8 44	10 32	3 36	16 12
	6 55	8 43	10 31		
	7 43	9 31	11 19		

The Moon's Eclipse, December the 2d, 1750.

	Begin.	Midd.	End	Durat.	Dig.
	h	h	h	h	°
Mr Cha. Mason, { London	4 41 6	26 8	12	3 32	20 58
jun. from Lead- { Sapperton	4 32 6	28 8	4		
better's Tab. { Lisbon	4 4 5	49 7	35		
Mr Sam. Sector for London	4 35 6	25 8	15	3 40	
Mr Tho. Allen { London	4 40 6	25 8	12	3 32	20 56
{ Barkley	4 35 6	21 8	7		
Mr Jos. Walker for London	4 41 6	31 8	22	3 41	29 31
Mr Benj. Donn { London	4 41 6	27 8	12	3 31	20 42
{ Bideford	4 24 6	9 7	54		
Mr Ro. Robinson { London	5 12 6	58 8	44	3 32	20 59
{ Newcastle	5 6 6	52 8	38		
Mr John Hollingworth, London	5 19 6	52 8	37	3 18	20 57
Mr Ab. Lord, Peckleton, Leicest.	5 13 6	58 8	44	3 31	21 14

With several other ingenious Gentlemen; see the Catalogue.

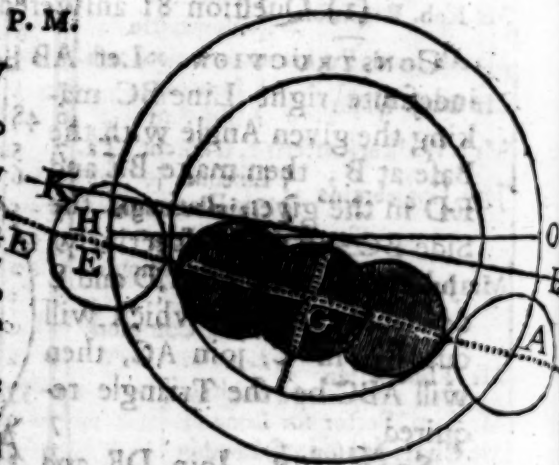
The *Times* and *Types* of the two visible Eclipses, as calculated from *Leadbetter's System*, for the Meridian of London, and sent us by our ingenious Contributor Mr *William Sutton*, are as below:

I. ECLIPSE.

h " P. M.

Reg. appt. time, {	7 3 47
June 8th, at {	
Beginning of total {	8 10 20
Darkness {	
Middle of Eclipse	8 52 7
Ecliptic Opposition	8 49 31
End of total Darkn.	9 33 54
End of the Eclipse	10 40 27
Digits eclips'd	16° 13 20
Duration	3 36 40

The Type



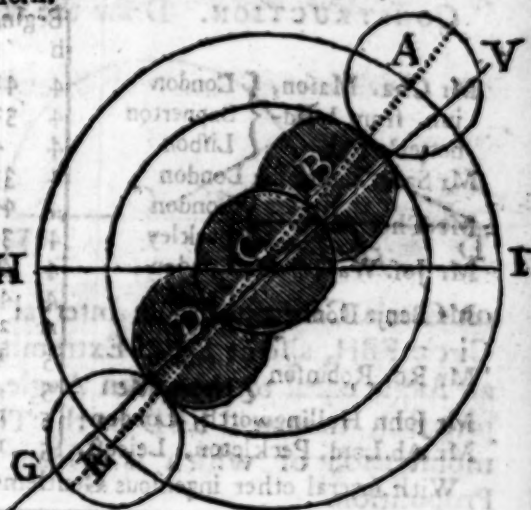
A is the Place of the Moon's Centre at the Beginning, G at the Middle, and E at the End of the Eclipse, KL the Ecliptic, and HO a Horizontal Line. The Moon rises that Night 8 h. 16 min. correct. by Refraction and Parallax.

II. ECLIPSE.

II. ECLIPSE.

The Type

	h	"	Morn.
Begin. app. time	4	39	53
Dec. 2, at			
Begin. of total	5	37	53
Darkness	6	25	56
Eclipse Opposition	6	26	28
Middle of Eclipse	7	15	3
End of tot. Dark.	8	13	3
End of the Eclipse	3	33	10
Duration	20	56	21
Digits eclips'd			

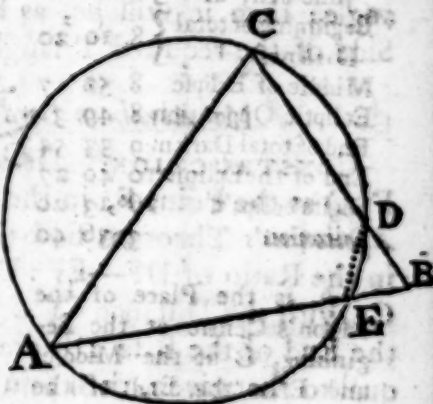


N. B. The Moon sets at London at 8 h. 17 m. which is 4 minutes after the Eclipse ends. A, B, C, D, and E are the Places of the Moon's Centre at the Beg. Immerf. Middle, Emerfion, and End of the Eclipse; HI is a horizontal Line and GV the Ecliptic

Answers to the MATHEMATICAL Questions of 1749.

(1) Question 81 answered by Mr Rob. Robinson.

CONSTRUCTION. Let AB be the given Base, draw the indefinite right Line BC making the given Angle with the Base at B; then make BE and ED in the given Ratio of the Side BC and AC respectively; and thro' the Points A, D and E describe a Circle which will cut BC in C, join AC, then will ABC be the Triangle required.



SOLUTION. Join DE and the Triangles DEB and ABC will be equiangular, then having EB, ED, and the Angle B given, the Angle D = Angle A will also be given; Again, in the Triangle ABC having AB and the Angles, the Sides AC and BC will be known.

Mr Tho. Moss, the Proposer, solves it thus:

CONSTRUCTION. Draw the right Line DE equal to the given Base, which let be divided at F in the given Ratio of the Sides, then (per Prop. 15. Book 4. of *Simpson's Elem. of Plane Geometry*) take FC to DF as EF to DF—EF; and upon C as a Centre with an Interval equal to CF describe the Circle FBH, also at E the Extremitly of the given Base, make an Angle equal to the given Angle, cutting the Circle in B; join BD, then will EBD be the Triangle required. The Demonstration of which is evident from the forementioned Proposition.



But to determine each Side of the Triangle without drawing or making use of a Line parallel to any Side thereof,

Join BC; then because the Base DE is given and divided at F, in the given Ratio of the Sides, consequently DF and

EF are also given, and also $FC = (BC =) \frac{DF \times EF}{DE - EF}$; therefore $EC = \frac{DF \times EF}{DE - EF} - EF$; then in the Triangle BEC are

given the Sides BC and EC, and the Angle BEC, to find the Angle EBC, and consequently BE the lesser Side of the Triangle; then it will be, as $EF : DF :: BE : BD$, the greater Side of the required Triangle.

Mr Abraham Lord's Answer to the same.

CONSTRUCTION. Divide the given Base DE (per last Fig.) at the Point F, in the given Ratio of the Sides, and by *Apollonius's Theorem* find the Centre C, in DE, continued, in the Ratio of $DF - EF : EF :: DF : FC$, and on the Centre C, with the Distance CF describe the Circle FBH, then from the End of the Base DE draw EB making the Angle at E equal to that given, then join DB and the Triangle DEB is that required (per p. 144. of *Oughtred's Clavis*, or p. 310. of *Simpson*.)

CALCULATION. Draw the Line BC, then in the Triangle ECB there is given the Sides EC, CB and the Angle at E, to find

find the Side BE , Again in the Triangle DEB is given DE, BE and the Angle at E , by which the Side DB may easily be found.

nov 18 Mr Benj. Donn's Solution to the same, runs thus:

CONSTRUCTION. With the given Angle and Ratio of the Sides make the Triangle Ebd , continue Ed at pleasure, make ED equal the given Base; also make the Angle $BED = \angle bEd$, and the Angle $BDE = \text{Angle } b d E$, then draw EB and BD ; and EDB is the Triangle required.

SOLUTION. In the Triangle Ebd , are given the Sides Eb , bd , and the Angle bEd , to find Ed . Then as $Ed : ED :: Eb : EB :: bd : BD$. By the Sector thus: Having made the ΔEbd , make Ed on the Line of Lines equal the given Base, then will Eb and bd measur'd on the said Line be the Sides required.

This Question was ingeniously sol'd by Mr John Todd, Mr Ch. Smith, Mr Wm. Kingston, Mr John Hollingworth, Mr Llewelin Davis, and several others, which, for want of room, we are obliged to omit in this Place, and refer you to the Catalogue at the End of the Book.

(2) Question 82 answer'd by Mr William Sutton.

Put x = the Sine of the Difference of Longitude of the two Ports = the Angle SPR, m = Sine of the Departure going out = ZN = 636 Miles = $40^{\circ} 36'$ (accounting 60 Miles to a Degree) r = Sine of the Departure in coming back = SR = 938 Miles = $15^{\circ} 38'$, Then by the common Cases in Right-angled Spher. Tri. the Side RN will be found = $21^{\circ} 20'$, for the Sine and Cosine of which put k and b , also the Angle RSP will be found = $80^{\circ} 00'$ its Sine put = g , then as $x : m :: 1 : \frac{m}{x}$ = Cosine of

the greater Latitude = NP, and as $x:r:g:\frac{g}{x}$ = Sine of

RP, but $NP + NR = PR$. $\frac{mb}{x} + \sqrt{1 - \frac{m^2}{x^2}} = \frac{g}{x}$ the

Surd reduced is $2x^2 = \frac{27g - 2mb}{k^2} + 2m^2 =$ the versed

Sine of twice the Arc, whence the Difference of Longitude of the two Ports is $18^\circ 30'$, and the Latitude of the Northern Port N is $= 54^\circ 34'$, and that of the Southern one S is $= 31^\circ 52'$.

The same answered by Mr Charles Smith.

In the right-angled Spheric Triangle NZS right angled at Z, there is given $NS = 1574 = 26^\circ 14'$, and $NZ = 636$ Miles $= 10^\circ 36'$, also in the right angled Spheric Triangle NRS right angled at R there is given $RS = 938$ Miles $= 15^\circ 38'$ and NS common to both, to find SE and NB as also the Angle NPZ; as Rad. : Tangent of NZ :: Co-tangent of NS : Cosine of Angle SNZ $= 67^\circ 40' 50''$. Again, as the Sine of NS : Rad. :: Sine of RS : Sine of the Angle RNS $= 37^\circ 33' 50''$ $\therefore 180^\circ - 67^\circ 40' 50'' - 37^\circ 33' 50'' = 74^\circ 45' 20'' =$ Angle PNZ, Then as Tangent of NZ : Cosine of the Angle PNZ :: Rad. : Tangent of NB $= 54^\circ 33' 31'' =$ the greater Latitude.

Then as Sine of NS : Rad. :: Sine of NZ : the Sine of the Angle NSZ $= 24^\circ 35' 31''$, and as Sine of NP : Sine of the Angle NSP :: Sine of NS : Sine of the Angle NPS $= 18^\circ 29' 43'' =$ the Difference of Longitude.

Lastly, as Sine of NP : Sine of the Angle NSP :: Sine of the Angle PNS : the Cosine of $SE = 31^\circ 50' 36'' =$ the lesser Latitude.

Mr Lhewelin Davies solves it thus :

Let P represent the North Pole, EQ the Equator, S the Southermost Port from which the Ship is supposed to sail on the great Circle to N the Northermost Port; let the Miles be reduced to Degrees, then will SN, the Distance run, be $= 26^\circ 14'$, ZN, the first Departure, $= 10^\circ 36'$, SR, the last Departure $= 15^\circ 38'$; hence in the right angled spheric Triangle SRN right angled at R are given the Sides SN and SR, from whence the Angle RNS is found $= 37^\circ 33' 49''$. Again in the right angled spheric Triangle NZS right angled at Z, are given

given the Side ZN, and NS being common to both Triangles, to find the Angle SNZ $= 67^{\circ} 40' 47''$, and the Side SZ $= 24^{\circ} 8' 11''$; but $180^{\circ} - 67^{\circ} 40' 47'' - 37^{\circ} 33' 49'' =$ the Angle ZNP $= 74^{\circ} 45' 24''$; Then in the right angled spheric Triangle PZN, right angled at Z, are given the Angle ZNP and Side ZN to find the Side PN $= 35^{\circ} 26' 36''$, and the Angle NPS $= 180^{\circ} 30' 30'' =$ the Difference of Longitude, and also the Side PZ $= 34^{\circ} 1' 14''$. Lastly, deduct the Sum of PZ + ZS from 90° , and there will remain $31^{\circ} 50' 35'' =$ the Latitude of the Southermost Port at S, and also deduct the Side PN $= 35^{\circ} 26' 36''$ from 90° , and there remains $54^{\circ} 33' 24''$ the Latitude of the Northermost Port at N, as was required.

The Proposer, Mr John Todd; and Mr Rob. Robinson, sent us curious and concise Solutions to this Question, but brought out the Latitude of the Ports a few Minutes more than these inserted.

It was also ingeniously solv'd by Mr Tho. Moss, Mr Ab. Lord, Mr Benj. Donn, Mr John Hollingworth, Mr Wm Kingston, Mr Rodge Widge, Telemicus, and several others; see the Catalogue at the End of the Book.

(3) Quest. 83 answer'd by Mr William Kingston.

Let P represent the Privateer, and M the Merchant Ship, then PC ($= 19,40$) and MC ($= 8,036 = m$) become known by Plane Trigon. Put PM $= 21 = b$, MA $= 30 = d$, and let S and T denote any two cotemporary Positions of the two Ships, also let the Tangent BD (which makes right Angles with AM) be called a ,

Put DC $= x$, SC $= y$,

BS $= z$, and DT $= nx$;

the Velocity of the

Privateer is to that of

the Merchant Ship as

1 is to v ; Then be-

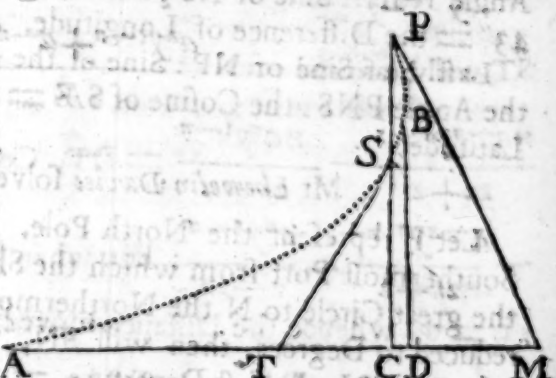
cause $\frac{yx}{y} = TC$ (uni-

versally) we have DT A

$= x - \frac{yx}{y} = nx$;

Then as the Fluxion of x is a variable

Quantity we have $\frac{-yx}{y} = nx = n\sqrt{yy + xx}$, which being



multiply'd by $\frac{y}{-y}$ will give $x = \frac{ny}{-y} \sqrt{yy+xx}$ whence

$$\frac{x}{\sqrt{yy+xx}} = \frac{ny}{-y}$$

Then because the Fluxion of the Logarithm of any Number or Quantity is equal to the Fluxion of the said Number or Quantity divided by itself; the Fluent of

the above will be $\frac{La^n}{y} = \frac{Lx + \sqrt{yy+xx}}{y}$. Consequently

$$\frac{a^n}{y^n} = \frac{x + \sqrt{yy+xx}}{y} \cdot \frac{a^n}{y^n} = x = \sqrt{yy+xx}, \text{ which squar-}$$

$$\text{ed is } \frac{a^{2n}yy}{y^{2n}} - \frac{2a^n yx}{y^n} + xx = xx + yy \therefore 2x = \frac{a^n y}{y^{2n}} = a^{-n} y^n y$$

whose Fluent's $2x = \frac{a^{-n} y^{n+1}}{n+1} - \frac{a^n y^{1-n}}{1-n}$ plus some constant

Quantity: But when y is $= BD = a$, x is $= 0$; then by writing those Values in the above Equation, it becomes

$$\frac{-a}{1-n} + \frac{a}{1+n} + b = 0, \text{ whence } b = \frac{2an}{1-n^2}, \text{ and } x = \frac{an}{1-n^2} +$$

$$\frac{a^{-n} y^{n+1}}{2n+2} - \frac{a^n y^{1-n}}{2-2n}, \text{ which put in Fluxions and multiply'd}$$

$$\text{by } \frac{y}{-y} \text{ is } \frac{a^n y^{1-n} - a^{-n} y^{n+1}}{2} = TC, \text{ and (per 47 E. 1.)}$$

$$ST \text{ will be found equal: } \frac{a^n y^{1-n} + a^{-n} y^{n+1}}{2}, \text{ and } \frac{na}{1-n^2}$$

$$\frac{na^{-n} y^{n+1}}{2n+2} - \frac{na^n y^{1-n}}{2-2n} = DT, \text{ Consequently } BS = \frac{a}{1-n^2}$$

$$- \frac{a^{-n} y^{n+1}}{2n+2} - \frac{a^n y^{1-n}}{2-2n} : \text{ but when both Ships concur at A,}$$

y is $= 0$, whence the Distance moved over by the Privateer from B to A, will be expressed by $\frac{a}{1-n^2}$: Suppose $TC = v$,

$TS = r$, then $a^n y^{1-n} = v + r$ and $a^{-n} y^{n+1} = r - v$ put $AT =$

$$z, \text{ then is } AD = x + v + z = \frac{na}{1-n^2} + \frac{a^{-n} y^{n+1}}{2n+2} - \frac{a^n y^{1-n}}{2-2n} + v$$

$+v+z=AB \times ed n = \frac{an}{1-n^2}$. Then if for $a=y^{n+1}$ and $a^{ny^{1-n}}$, we write their Values, viz $r-v$ and $r+v$ we have $\frac{r-v}{2n+2} + \frac{r+v}{2-2n} = 0$, whence we have this Theorem,

$v+z \times n^2 - rn = z$, which will answer all the Varieties that can possibly happen; From what is given above we have $n = \frac{\sqrt{4d^2 - 4md + b^2} - b}{2d - 2m} = .7846a = \frac{m^{\frac{1}{2}}}{y^{1-n}}$

1.59 = the Difference of Latitude when they are North and South of each other, $x = \frac{na}{1-n^2} + \frac{b-m}{2n+2} - \frac{b+m}{2-2n} = 1.443 =$ East Departure, and $AC = 21.964 =$ the West Departure, whence $d = 38.236 =$ the Dist. sailed by the Privateer.

Several more of our ingenious Contributors sent Solutions to this Question, as Mr Rob. Robinson, Mr Tho. Moss, Mr Ch. Smith, Mr Lhewelin Davis, Mr Benj. Donn, Philo Mathematicus, and others; see the Catalogue.

(4) Quest. 84 answered by Mr John Todd.

Put x and $y =$ the Sine and Cosine of the Latitude, v and $z =$ Ditto of the Sun's Declination, $a =$ the Sine of the Sun's Altitude at Four, $s =$ the Sine of Ampl. and c the Cosine of of the Hour Angle. Then (per Anderson's Theorem) $cyx + vx = a$ and $1:s::y:sy=v \therefore z = \sqrt{1-s^2y^2}$, whence $cy\sqrt{1-s^2y^2} + sxv = a = cy\sqrt{1-s^2y^2} + sy\sqrt{1-y^2}$, where $y =$ Co-sine $52^\circ 30' =$ Lat. of the Place, hence the Declinat. $= 10^\circ 58'$ North shews the Day of Observation was April 7.

The same answer'd by Mr. Rob. Robinson.

Here is given the Sun's Alt. at 4 o'Clock $= 26^\circ 43' 39''$ Sine $= n$, the Angle $ZP\odot = 60^\circ$, its Co-sine $= d$, $AC = 18^\circ 12' 36''$ Sine $= p$. Let x and $y =$ Sine and Co-sine of the Latitude, v and $w =$ Sine and Co-sine of the Sun's Declination. Then as $1:p::y:py=v$, and $dyw + xv = n$, hence $dyw + pyx$



26^s Questions answer'd in last Year's Diary. I

m , and $d^2y^2m^2 = m^2 + p^2y^2x^2 - 2m^2pyx = d^2y^2 - d^2p^2y^2$ or
 $\frac{m}{d^2y^2} = \frac{p}{x} = 1 + py \times 1 - py$, from which Equation the
Latitude of the Place will be found $= 52^\circ 30'$, hence the Sun's
Declination $= 10^\circ 58'$ North, answering to April the 7th, or
Aug. 13.

The same answered by Mr. Benj. Donn.

Put $c =$ Co-sine of the Arc of Time from Noon, x and y
 $=$ Sine and Co-sine of the Latitude, z and $p =$ Sine and Co-
sine of the Sun's Declination, $m =$ the Sine of the Sun's Altitude
at the given Time, and $s =$ the Sine of the Amplitude.
Then per Theorems in Spherics $pyc + xz = m$, and $y : z ::$
 $\frac{x}{z} = s$, $\therefore z = sy$, and $p = \sqrt{1 - s^2y^2}$; hence exterminating
 p and z out of the above Equation, it will be $\sqrt{c^2y^2 - c^2s^2y^2}$
 $+ sx = m$, which solved, the Latit. of the Place will be found
 $= 52^\circ 30'$, and from thence the Declination will be found $=$
 $10^\circ 58'$ North, answering to April 7, or August 13.

Mr John Hollingworth's Solution to the same.

Put $y =$ the Sine of the Sun's Altitude, $p =$ the Sine of the
Hour from 6, $m =$ the Sine of Sun's Amplitude, and put x
and $c =$ the Sine and Cosine of the Sun's Declination. Then
 $m : 1 :: x : \frac{x}{m} =$ Co-sine of the Lat. and $\overline{CB}^2 - \overline{DB}^2 = \overline{DC}^2$
 $\therefore \sqrt{m^2 - x^2} = DC$, also $\odot D + DC : 1 :: \odot R : \text{the Co-sine}$
of the Latitude $\therefore \sqrt{m^2 - x^2} + cp : 1 :: y : \sqrt{m^2 - x^2} + cp =$
 $\frac{x}{m}$; resolved $x = 19056 = 10^\circ 59' =$ the Sun's Decl. and $\frac{x}{m}$
 $=$ the Cosine of $52^\circ 30'$ the Latitude of the Place. The Day
of Observation is August 13.

The same answer'd by Mr Tho. Garrard.

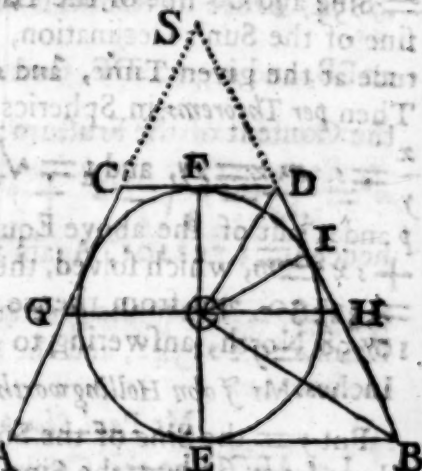
Given $\begin{cases} ZO = \text{Compl. of the Sun's Alt.} & 63 \ 43 \ 39 \\ eZP = \text{Compl. of his Amp. from West} & 71 \ 47 \ 24 \\ \odot PZ = \text{the Hour Angle from Noon} & 60 \ 00 \ 00 \\ eZ = \text{Radius whose Sine is} & 1 \ 90 \ 00 \ 00 \end{cases}$ whose $\begin{cases} b \\ d \\ m \end{cases}$
Required $\begin{cases} ZP = \text{the Complem. of Latitude} \\ P\odot = \text{the Complem. of Declin.} \end{cases}$ whose Sine and $\begin{cases} x \text{ and } y \\ \text{Co-sines call } v \text{ and } z \end{cases}$
Then (per Spherics) we have $\begin{cases} mxv + yz = b \\ dx = z \end{cases}$ and (p. 47 E. 1.)
 $v =$

$v = \sqrt{1 - x^2}$, also $y = \sqrt{1 - x^2}$, which substituted for x , v , and y respectively, give $m x \sqrt{1 - x^2} + x \sqrt{1 - x^2} = b$, which solved gives $x =$ the Sine of $37^\circ 30'$. Consequently the Latitude of the Place is $52^\circ 30'$, and the Declination $10^\circ 58'$ North, answering to the 7th of April, or 13th of August.

A great Number of our ingenious Contributors sent Solutions to this Question; see the Catalogue.

(5) Quest. 85 answer'd by Mr Tho. Moss.

It is demonstrable that $BE \times DE = OE^2$. For the Sum of the Angles EBD and FDB being equal to two right Angles, the Sum of their Halves, or $EBO + FOD =$ to one right Angle $= FDO + FOD$, and consequently $EBO = FOD$. $\therefore$ per similar Triangles as $EB : EO :: OF : FD :: EB \times FD = EO \times OF = OE^2$. Moreover we have



$AB^2 + CD^2 + CD \times AB \times \frac{2}{3} EF \times .7854 =$ the Content of the Frustum; also $EF^2 \times \frac{2}{3} EF \times .7854 =$ the Content of the Sphere. $\therefore$ the Frustum is to the Sphere as $AB^2 + CD^2 + CD \times AB : 2EF :: 2 : 1 (m : n)$; but $2GH = AB + CD \therefore 4GH = AB^2 + 2AB \times CD + CD^2$. Now by what is demonstrated above, $EF^2 = AB \times CD$, which by subtracting from the last Equation, we have $4GH^2 - EF^2 = AB^2 + AB \times CD \times CD^2$, and consequently the Frustum is to the inscribed Sphere as $4GH^2 - EF^2 : 2EF^2 :: m : n$; or as $8GH^2 - 2EF^2 : 2EF^2 :: 2m : n$; and consequently by Composition as $8GH^2 : 2EF^2 :: 2m + n : n$; whence $GH^2 = \frac{2m + n}{4n} \times EF^2$, which in the Case proposed (when $m = 2$ and $n = 1$) will be $GH^2 = \frac{5}{4} \times EF^2$, then

$GH = \frac{EF}{2} \times \sqrt{5} = OI \times \sqrt{5}$; $\therefore OH = \frac{OI}{2} \times \sqrt{5}$; and $\therefore$

$HI^2 (= OH^2 - OI^2) = \frac{5OI^2}{4} - OI^2 = \frac{OI^2}{4} \therefore HI = \frac{OI}{2}$, and

consequently $EB (BI) = \frac{OI}{2} \times \sqrt{5} + \frac{OI}{2} = \frac{OI}{2} \times 1 + \sqrt{5}$ and

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and $DF (= DI = DH - HI) = \frac{OI}{2} \times \sqrt{5 - \frac{OI}{2}} = \frac{OI}{2} \times \frac{1 + \sqrt{5}}{2}$, from all which it appears, that the Base and top Diameters are to the Radius of the inscribed Sphere as $\sqrt{5+1} : 1$ and as $\sqrt{5-1} : 1$, respectively.

The same answered by Mr Rob. Robinson.

Let $m = 1728$ Cubic Inches the Content of the Globe, $r = 7854$, hence its Radius is $\sqrt[3]{\frac{3m}{16r}} = a = 7,4442$, also let $x + y = EB$, and $x - y = DF$, then $a : x + y :: x - y : a :: a^2 = x^2 - y^2$, the Content of the Frustum $= \frac{24x^2 + 8y^2}{3} \times r a = 2m$, hence $x^2 = \frac{m}{4ra} = \frac{y^2}{3} = a^2 + y^2$, and $y^2 = \frac{3m}{64ra} = 13,85404$ hence $y = 3,722101$, Again $x^2 = \frac{15m}{64ra} = 69,272$, and $x = 8,322872$, hence the greater Diameter $= 24,089946$, the less Diam. $= 9,201542$, and the Height of the Frustum $= 14,8884$ Inches.

Mr Paul Sharp answers it thus:

Let ABCD be the Conic Frustum proposed, O the Center of the inscribed Sphere, draw the Radius to the Point of Contact I, and compleat the whole Cone; put EF the Diameter of the Sphere $= 2a = 1,2407$ Feet, $SI = y$, and $SO = x$, Then SE is $= x + a$, $SF = x - a$, and (per sim. Triangles) we have

as $y : a :: x + a : \frac{ax + a^2}{y} = AE :: x - a : \frac{ax - a^2}{y} = CF$, whence

(per Ward, p. 413.) we have the Solidity of the Frustum $\frac{24a^3x^2 + 8a^5}{3,8197y^2} = 2$ solid Feet per Quest. but $y^2 = x^2 - a^2$ (47 E. 1.) and $3,8197 = 16a^3 \therefore \frac{1,5x^2 + 0,5a^2}{x^2 - a^2} = 2$; whence $x^2 =$

$5a^2 \therefore x = a\sqrt{5} = 1,38714$ and $y = 1,2407$, conseq. the Frustum's greater Diam. is $2,00749$, and its lesser $= 0,76679$ Feet.

This Quest. was likewise ingeniously solved by Mr Ab. Lord, Mr Wm. Kingston, Mr John Todd, Mr Cha. Smith, Mr Lhewelin Davis, Mr Wm Jepson, Mr Wm Spicer, Mr Benj. Donn, Mr Jos. Wakerton, Mr Wm Bevil, and several others; see the Catalogue.

(6) Quest.

(6) Quest. 86 answer'd by Mr Wm Kingdon the Proposer.

Let $b=230,4$, $2d=39,24716$, x and y = the Abscissa and Semiordinate, and by the Property of the Curve $x=y^2$. $a=\frac{y^2}{x}$ and $x=\frac{3b}{4y}$ $\therefore a=\frac{4y^3}{3b}$, and (by Exam. the 2d of Emerson's Fluxions, p. 170.) we have $\frac{y}{a}\sqrt{a^2+y^2}+\frac{2,30258a}{4}$

$\times \text{Log. } y + \sqrt{\frac{a^2}{4} + y^2}$. Then if for a , and a^2 , their Values be substituted as before found, we shall have $\frac{3b}{4y}\sqrt{1+\frac{4y^4}{9b^2}}+\frac{ey^3}{3b}$
 $\times \text{Log. of } 3b+3b\sqrt{1+\frac{4y^4}{9b^2}}=d$ ($c=2,30258$) Let n be

assumed nearly equal to y , which by a few Tryals I find nearly 15, and put z = its Diff. then by omitting all the Terms affect-
 ed with $z^2, z^3, \&c.$ we have $\sqrt{1+\frac{4y^4}{9b^2}}=\sqrt{1+\frac{4n^4+16n^3z}{9b^2}}$

put $1+\frac{4n^4}{9b^2}=a^2$, and $\frac{16n^3}{9b^2}=m$, Then $\sqrt{a^2+mx}=a+\frac{m}{2a}z$: by extracting the Roots, dividing by $\frac{3b}{4y}$, and substituting for y, y^2 , and y^4 their Values, the Equat. will become $a+\frac{m}{2a}z+\frac{4c}{9b^2}\times n^2z^2)^4 \times \text{Log. of } \frac{3b+3ba+\frac{3bmx}{a}}{2n^2+4nz}=\frac{4dn+4dz}{3b}$

put $\frac{r}{c}=r$, and $3b+3ba=p$. Then by Logarithms: Log.
 $\frac{3b+3ba+3bmx}{2n^2+4nz}=\text{Log. } p-\text{Log. } 2n^2+\frac{3bm}{ap}-\frac{2}{n}\times rz$; Put g

$L. p-L. 2n^2$ and $h=\frac{3bm}{pa}-\frac{2}{n}$. Then it will become $a+\frac{m}{2a}z+\frac{4c}{3b^2}\times n^2z^2-4n^3z\times g+brz=\frac{4dn+4dz}{3b}$, therefore

$\frac{4dn}{3b}-a-\frac{4cgn^4}{9b^2}$

$z=\frac{\frac{4dn}{3b}-a-\frac{4cgn^4}{9b^2}}{\frac{m}{2a}+\frac{16cn^3g+4bn^4}{9b^2}-\frac{4d}{3b}}=-,105$, and by repeating
 the Operation, we have $n+z=14,99308$, and $x=11,52$.

The same answer'd by Mr Tho. Mofa

Put the given Area $=b$, the Length of the Curve $=c$; then
 the

the Equation of the Curve being $ax = y^2 \therefore x = \frac{y^2}{a}$ the Abscissa; whence by the Property of the common Parabola we get these two Equations, $\frac{2y^3}{3a} = b$, and $\frac{y}{2a} \times \sqrt{a^2 + 4y^2} + a \times \text{Log. } 2y + \sqrt{a^2 + 4y^2} = c$; but by the first Equat. $a = \frac{2y^3}{3b}$; which substituting in the latter Equation, we shall have

$$\frac{3b}{4y^4} \times \sqrt{\frac{4y^6}{9b^2} + 4y^2} + \frac{2y^3}{3b} \times \text{Log. } \frac{2y + \sqrt{\frac{4y^6}{9b^2} + 4y^2}}{\frac{2y^3}{3b}} = c; \text{ or}$$

$$\frac{\sqrt{4y^6 + 36b^2y^2}}{2y^2} + \frac{2y^3}{3b} \times \text{Log. } \frac{6by + \sqrt{36b^2y^2 + 4y^6}}{9b^2} + \frac{36b^2y^2}{2y^3} = c; \therefore \frac{\sqrt{y^4 + 9b^2}}{y} + \frac{2y^3}{3b} \times \text{Log. } \frac{3b + \sqrt{y^4 + 9b^2}}{y^2} = c, \text{ from}$$

whence the Value of y , may be found, and consequently that of x ; the required Abscissa.

The same answer'd by Mr Rob. Robinson.

Let $m = 39,24716$ = the Length of the Curve, $n = 230,4$ = the Area, y = the Semiordinate, and v = the Parameter, then the Abscissa is $= \frac{y^2}{v}$, and the Area $= \frac{4y^3}{3v} = n \therefore v = \frac{4y^3}{3n}$.

but the Length of the Curve is equal $\frac{y}{v} \sqrt{v^2 + 4y^2} + 1,151292v \times \text{Log. } \frac{2y + \sqrt{v^2 + 4y^2}}{v} = m$, in which for v ,

substitute its Value, and we have

$$\frac{\sqrt{4y^4 + 9n^2}}{2y} + 1,151292 \times \frac{4y^3}{3n} \times \text{Log. } \frac{3n}{2y^2} + \frac{\sqrt{4y^4 + 9n^2}}{2y^2} = m, \text{ from which Equation the Value of } y \text{ may easily be found.}$$

(7) Quest. 87 answer'd by Mr Cha. Smith.

Let t = Tangent of 60° = Angle APB, s and c Sine and Cosine of the Lat. of the Port D, p and q = Ditto of the Arc AD = DB, x and y = Sine and Cosine of the Angle ADP = Ditto of the Angle BDP; Then (per Spherical Trigonom.)

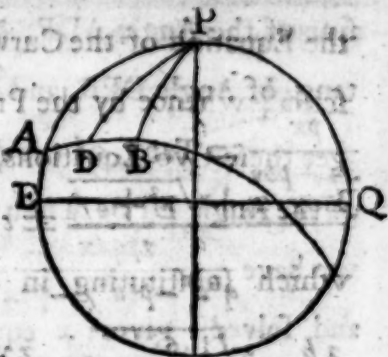
px

$\frac{px}{qc - py} = \text{Tangent of the Angle APD, and } \frac{px}{qc + py} = \text{Tang.}$

of the Angle $\angle BPD$; hence

$\frac{2pqcx}{c^2q^2 - p^2y^2 - p^2x^2} = (\text{the Tan-}$
 gent of their Sum) = z , substi-
 tute $1 - x^2 = y^2$, then $x^2 +$

$$\frac{2q}{spc} x = \frac{q^2}{p^2} - \frac{s^2}{c^2} \therefore x = \frac{\sqrt{q^2 + r^2 q^2 c^4 - s^2 s^2 p^2} - q}{spc}$$



853115 = the Natural Sine of $58^{\circ} 33' 8''$, whence the Latitude of the Port A is $= 58^{\circ} 32'$, and that of B is $= 38^{\circ} 19'$, also the Port A from D bears (North) $58^{\circ} 33' 8''$ Westerly, and B from D South $58^{\circ} 33' 8''$ Easterly, likewise the Difference of Longitude between A and D is $36^{\circ} 37'$, and between B and D, $23^{\circ} 23'$.

The same answer'd by Mr William Sutton.

Let v and r = Sine and Cosine of the Lat. of the Port D, x and y = those of the Bearing of the Ports A or B from the Port D, b and c = Sine and Cosine of their Distance from the Port D, and m = Cotangent of the Difference of

Longitude of the Ports A and B, Then will $\frac{ra+yb}{bx} = \text{Co-tangent of the Longitude of the Port B from D, also } \frac{ra-yb}{bx}$

= Cotang. of the Long. of the Port A from D, and the Cotangent of their Sum will be $\frac{b^2 x^2 + y^2 v^2 b^2 - r^2 c^2}{\dots} = m$, there-

$$\text{fore } x = \frac{cm}{rb} \sqrt{\frac{c^2}{b^2} - \frac{v^2}{r^2} + \frac{c^2 m^2}{b^2 r^2}} = -8531 = \text{the natural.}$$

Sine of $58^{\circ} 33'$ = the bearing of the Port A from D North, Westerly, and of B from the South, Easterly, whence the Lat. of the Port A is $= 58^{\circ} 32' 10''$, and of the Port B $= 38^{\circ} 18' 55''$.

Mr William Spicer's Answer is as follows :

Let P represent the North Pole, and put a and b = Sine and Cofine of DP, t = Tangent of the Angle APB, p and q = Sine and Cofine of AD=DB, and x and y = Sine and Cofine

fine of the Angle ADP, Then (per Spherics) $\frac{qa + pby}{px} = \text{Co-}$
 tang. of Angle DPB, and $\frac{qa - pby}{px} = \text{Cotang. of Angle DPA} \therefore$
 $\frac{qa - pby}{px} = \text{Tang. of the Angle DPA, and } \frac{qa + pby}{px} = \text{Tang.}$
 of the Angle DPB. Then (per Thacker's Miscell. vol. i. p. 101.)
 we have $\frac{2pqax}{q^2a^2 - p^2b^2y^2 - p^2x^2} = 1$, which Equation reduced
 and solved, gives x equal $\sqrt{q^2a^2 + q^2 - p^2b^2} - q = .85289$

$=$ the natural Sine of $58^\circ 31' 54''$; hence the Latitude of the
 Port B is $38^\circ 18' 46''$, and its bearing from the Port D is
 South $58^\circ 31' 54''$ Easterly, and the Latitude of the Port A
 is $58^\circ 28' 8''$, and its bearing from the Port D is North 58°
 $31' 54''$ Westerly.

The Proposer, Mr Paul Sharp's, Solution to the same.

Let P represent the North Pole, then will PD be the Com-
 plement of the given Latitude of the Port D $= 37^\circ 43'$, the
 natural Sine and Cosine of which call b and c respectively, put
 $a =$ the Cotangent of AD or DB, and $n =$ the Cotangent of
 $60^\circ =$ the Angle APB, also put x and $y =$ Sine and Cosine of
 the Angle ADP; then will x and $-y$ be the Sine and Cosine of
 the Angle BDP, Radius $= 1$: Then (per Theor. 12. p. 101. of

Thacker's Miscell.) $\frac{ab - cy}{x} = \text{Cotang. of Angle APD, and } \frac{ab + cy}{x}$

$=$ Cotang. of Angle BPD, the Sum of which is $\frac{2abx}{x^2 + c^2y^2 - a^2b^2}$

$= n$, (per Quest.) $\therefore 2abx = nx^2 + c^2ny^2 - a^2b^2n$. but

y^2 is $= 1 - x^2$ (per 47 E. 1.) $\therefore 2abx = nx^2 - nc^2x^2 + nc^2$

$- a^2b^2n \therefore nx^2 - c^2nx^2 - 2abx = a^2b^2n - nc^2$, put

$\frac{2ab}{n - c^2n} = 2m$, and $\frac{a^2b^2n - nc^2}{n - c^2n} = s$, Then $x^2 - 2mx = s$,

whence $x = \sqrt{s + m^2} + m = .85315 = 58^\circ 33' 24'' =$ the

Angle ADP; Thence the Lat. of the Ports A and B are 58°
 $32'$ and $38^\circ 19'$ respectively. Q. E. L.

(8) Quest. 88. answer'd by Mr Anth. Baker, the Proposer.

In the annexed Scheme let PQSÆ represent the Meridian of
 the Place, HO the Horizon, EQ the Equator, ds a Parallel of
 Declination, ZN the prime Vertical, and PS the Axis of the
 Sphere;

Sphere, Then it is plain that ZP will represent the Complement of Latitude, ED or the $\angle ZPO$

The Hour from Noon, A☉ the
Altitude, and AC, or Angle ☉ZB
the Sun's Azim. from the East.

And because they are all equal

(or Qu.) to each other, therefore let the Sine and Cosine of any one of them be represented by x and y ,

Then we have y and $x = \text{Sine}$
and Cofine of $\odot Z$ the Compl.
of Altitude , and $x = \text{Cofine}$ of
 $\angle PZ\odot$, hence $x^2 - y^2 = \text{Cofine of } P\odot$. But (per common
Spherics) $x : y :: y^2 : \frac{y^2}{x} = \text{Sine of } P\odot$, whose Cofine is $\frac{\sqrt{x^2 - y^2}}{x}$

$\frac{2}{3}xy - x^2y$, which reduced gives $x^8 - 2x^7 + 2x^5 - 2x^4 + 5x^2 = 1$. Where x is $= .622768$ = the Sine of $38^\circ 31' 6'' 48''$; therefore the Latitude of the Place is $= 51^\circ 28' 53'' 12''$, and the Sun's Declination is $10^\circ 35' 25''$, answering to the 6th of *April*, or the 15th of *August*; and lastly 9 h. 25 m. 55 sec. 33 th. must be the Time of Day required.

Put x and y = Sine and Cosine of the Latitude, then
 will $xy - xy^2$ = the Sine of Declination; and as $y : x :: x : \frac{x^2}{y}$
 $\frac{x^2}{y}$ = Cosine of the Decl. whence $x^2y^2 - 2x^2y^3 + x^2y^4 + \frac{x^4}{y^2}$
 $= 1$, by Reduction $y^8 - 2y^7 + 2y^5 - 2y^4 + 3y^2 = 1$. Solved $y =$
 $.622786$ = Cosine of $51^\circ 28' 50''$ = the Latitude, hence the
 Declination is $= 10^\circ 37'$ answering in the Table to *April 6*, or
August 15, and the required Time of the Day is either $25^\circ 56''$
 past NINE in the Morning, or $34^\circ 4''$ past Two Afternoon.

The same answer'd by Mr Tho. Garrard.

Let P (in the above Scheme) represent the North Pole, and Z the Zenith, then will ZP be = the Complement of Latitude, P⊙ the Complement of Declination, Z⊙ the Complement of the Altitude, and the Angle ⊙ZP the Azimuth from the North, whose Supplement to 180° is the Complement of the Sun's Azimuth from the East, also the Angle ZP⊙ is = Arc from Noon, whose Sine and Cosine call x and y respectively, which will also represent those of ZP the Complement of Latitude.

DEMONSTRATION. Join BE and EC, make AF = the Sum of the Sides, and let BF be drawn till it meets E N parallel to AB, and since by Construction the Angle DAE is a right one, therefore the Periphery will pass thro' the Points A and B (by 31 E. 3.) Now since the Angle ACE = Angle BCE = Angle BAE = Angle ABE, Angles BEC + FBC = ACB, and Angle ABE = Angle BNE. But Angle OBN = Angle CAE, whence the Angle BEN = Angle EBO, consequently NF is parallel to EC, and Angle FBC = Angle BFC, whence BC = CF, and AF = AC + BC.

CALCULATION. First there is given DG equal

$$\frac{AC + BC - AB \times AC + BC + AB}{4GI} = \frac{AF - AB \times AF + AB}{4GI}$$
 and GE = $\frac{AB^2 \times GI}{AF - AB \times AF + AB}$ whence we have the following

THEOREM. At the Rectangle under the Sum and Difference of the Base and Sum of the Sides is to the Base, so is the Perpendicular to the Tangent of half the vertical Angle, whence all the other Parts will become known.

Mr Tho. Garrard's Answer to the same.

Given { The Area = A
 The Perimeter (= the Sum of the Base and Sum of the Sides) = P
 And the Sum of the Base and Difference of the Sides = d

Consequently the lesser Side is also given = $\frac{P-d}{2}$, which now makes the Base, then will $\frac{P+d}{2}$ = the Sum of the other two Sides, and d will be the Difference between the Base and Sum of the other two Sides. By Theorem 11. p. 13. of Thacker's

Miscellany, $4A : P :: d : \frac{dP}{4A}$ = the Tangent of half the Sum of

the Angles at the Base, whose Cosine call q. Then (per

Theorem 9. of the same) we have $\frac{P-d}{2} : \frac{P+d}{2} :: q : \frac{Pq+dq}{P-d}$

= the Cosine of half the Difference of the Angles at the Base.

Now having all the Angles and one Side, the rest may easily be found by Trigonometry.

Mr Abraham Lord solves it thus:

Put a = the Area of the Triangle ABC (per last Scheme)
 b = AB + AC + BC, and c = AB + AC - BC, now for AB put x,

36 Questions in last Year's Diary answer'd. T

for CA put y , and for BC put z . Then (*per Qu.*) will be had these two Equations, $x+y+z=b$, and $x+y-z=c$; Therefore it is manifest that $2z=b-c$, by which BC is known, for which put d , and consequently $x+y$ is also known, for which put f . Then (by *Thacker's Miscell. Theorem* 11. p. 13.)

is had as $4a:b::f-d:\frac{bf-bd}{4a}$ = the Cotangent of half the

Angle ACB, And as $d:f::$ Cosine of half the Sum of the Angles at the Base: to the Cosine of half their Difference.

The same answer'd by Mr Rob. Robinson.

Given the Area of the Triangle ABC = m , Perimeter = n ,

and AB+AC-BC = a , Then is AB+AC = $\frac{a+n}{2}$ and BC =

$\frac{n-a}{2}$, Let $x=AB$, then $\frac{a+n-2x}{2} = AC$, and $\frac{2m}{x} =$

CH, but $x:n-x::a-x$: the Difference of the Segments =

$\frac{x-x \times a-x}{x}$, hence HB = $\frac{x^2-an+ax+nx}{2x}$, and (by 47 E. 1.)

$$\frac{(n-a)^2}{4} = \frac{4m^2}{x^2} + \frac{(x^2-an+ax+nx)^2}{4x^2}$$

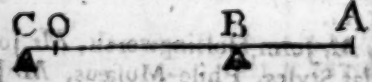
This Question was truly and ingeniously answered by Mr Tho. Mofs, Mr Tho. Hare, Mr John Todd, Mr Wm Bevil, Mr Lhewelin Davis, Mr Cha. Smith, Mr T. Ward, Mr Wm Jepson, Mr Paul Sharp, Mr Wm Spicer, Mr Wm W—dh—m, Mr Benj. Donn, and several others; see the Catalogue at the End of the Book.

(10) Quest. 90 answer'd by Mr William Kingdon.

Let $a=24$ Inches = the Distance of the first Weight from the Top of the Arm, $b=70$ = the whole Length of the Stick and Arm together, $w=5$ Pounds W^t, and $v=2$, Then will $\frac{a^2v+b^2w}{av+bw} = 64.45226$ Inches = the Distance of the Centre of Percussion from the Top of the Arm.

The same answer'd by Mr Tho. Mofs.

Let Band C denote the two given Weights fix'd to the Rod AC, revolving about the Extreme A, as

 a Centre; Put AB = $a=24$, AC = $b=70$, and AO = x ; Then the Momentum of the Weight C will be as Cb , which multiply'd by the Distance OC ($b-x$) will be as the Force by which the Weight

Weight Endeavours to make B ascend; and in the very same manner the Force of B will be $aB \times x = aB \times b = aB \times x$, and consequently $aBx + Cbx = Cb^2 + Ba^2$ and $x = \frac{Cb^2 + Ba^2}{aB + bC} = AO = 64,45226$ Inches.

Mr Benj. Donn's Answer to the same.

If I take this Question right, 'tis the same as to find the Center of Oscillation of a Pendulum whose Length is 70 Inches and Bob 5 Pounds, a Weight of 2 Pounds being placed 24 Inches from the Point of Suspension. This granted; Then by the Nature of compound Pendulums $70^2 \times 5 + 24^2 \times 2 = 64,45226$ Inches = the Distance of the Point of Suspension and Oscillation, or Percussion.

Mr Jos. Walker, Mr Wm Spicer, Mr Ab. Lord, and several others, solved this Question in nearly the same manner as above; but as it is impossible that we should insert any thing near the Number of Solutions that we receive, it may easily be imagined that very often we are obliged to leave out as good (Solutions) as those we insert.

The PARADOXES answered.

Paradox I. answer'd by Jerry Jinglebrains.

The first Hand I take is Two Kings and a Tre,
For the second a Queen and Two Duces I lay;
The third is Three Aces, which play as you can,
For, believe me you may, Sirs, no Gamester I am.

Paradox II. answer'd by Mr Ed. Lashmar.

Amongst the many Towns in Kent

There was not one that did

Seem to agree with what was meant,

I thought, so well as LIDB:

Which be it great, or be it small,

Whoe'er does 't rightly spell;

The Name 'tis certain, Brother Hall)

Begins with th' Letter L.

In like manner they were answered by Mr John Hollingworth, Mr John Simpleton, Mr Tho. Hare, Mr Nicholas Styles, Philo-Museus, Mr Jos. Jolthead, Sam Singleton, Mr James Mayo Jun, and several others; see the Catalogus.

38. Ænigmas in last Year's Diary answered.

Answers to the ÆNIGMAS in last Year's Diary as

- | | |
|-------------------------|-------------------------|
| I. SILENCE, | VI. A MARRIED WOMAN. |
| II. An EYE. | VII. The RIVER TRENT. |
| III. A STINGING NETTLE. | VIII. A PEN. |
| IV. A DICTIONARY. | IX. A WEAVER'S SHUTTLE. |
| V. A KISS. | X. A SPIDER. |

Mr Rob. Matlock, in a Church-yard Winter Evening Walk,
answers all the Ænigmas thus :

SILENTLY musing in the lonesome Eve, 1
My PEN and WORD BOOK, usefess, laid aside, 8, 4
By Twilight's dusky Shade, I pensive walk
With silent Step to th' Mansion of the Dead ;
Where youthful Lovers join in WEBLOCK BANDS, 6
And greet each other with the Nuptial Kiss. 5
No SPIDER pendant now from Bough appears 10
Night's Sable Mantle shading VISION'S BEAM, 2
And Darkness wrapt me in the Nightly Gloom,
With Thoughts as pungent as the NETTLE'S Sting ; 3
When thus reflecting on the Course we run,
Lord ! what is Man ! with sighing Throb I cry'd,
His Life glides on, like to the RIVER'S Stream, 7
Or like a SHUTTLE in its swift Career 9
Th' Aernal State of the next World to reach.
Then, Great Creator ! aid my mental View,
With Grace and Virtue all my Thoughts inspire,
And crown my Race with never-fading Bliss.

All the Ænigmas answer'd by Captain Mary.

Hammond's ingenious Lines present
The SILENT-flowing Silver TRENT. 1, 7
Hall proves that Pain's no pleasing thing
From bearded NETTLE'S pungent Sting ; 3
And Chapple, or from Truth I vary,
Describes some kind of DICTIONARY. 4
And we to these, for sake of Rhyming,
A SHUTTLE and the WEB adjoining ; 9, 10
But what does waggish Japson drive at
That's Kiss'd by Maids and Wives in private, 6
With half an EYE we ken his Meaning, 2
And to my PEN refer th' explaining. 8

All

All the *Enigmas* answer'd by Mr *Sam. Hammond* of *Norringham*,
in the following *Lines* from a *Lover* to his offended *Mistress*.

TELL me, dearest *Betty*, why

You of late are grown so shy;

Say, did any thing offend

In the Letter that I PEN'd?

For altho' my Thoughts were chaste,

Yet, as it was wrote in haste,

Sense or Spelling might miscarry,

Having not a *DICTIONARY*

To adjust the Language by,

Fitting to approach your *EYE*.

Or, my *Betty*, was it this,

That I stole a balmy *KISS*,

As in Bed you sleeping lay,

And in *SILENCE* slunk away?

But ere I the Room could leave

A huge *SPIDER* did perceive,

(Horrid Sight!) with nimble Pace

Passing o'er my *Betty's* Face:

When, awaking, lovely Maid!

You was frighted, I betray'd?

Be it one, or both, of these,

Sure Repentance may appease;

Since the Crimes are only such,

As proceed from loving much.

Fairest! let me not be told

Like a *SHUTTLE*, till I'm lost;

Sooth'd with Hope, and STUNG with Fear

Till I'm driven to Despair:

For if you'll not be my *WIFE*,

TRENT's clear Stream shall end my Life.

All the *Enigmas* answer'd in the Description of the Morning,
by *Sam. Squib*.

SCARCE had *Aurora* with approaching Light,

Dispell'd the Horrors of the *SILENT* Night;

When pensive rising from my Bed, I went

Adown the daisy'd Banks of *RIVER TRENT*,

The beauteous Scenes affect my ravish'd *EYE*,

No Cloud appears to veil the purpled Sky;

The Meadows glisten with the *SPIDER's* Dews,

And now the waking Swain his Toil renews;

From

Ænigmata in 1811 Year's Diary answered

From NAT'L Talent's the Earth (labourious Laid), hniW 3
 And leaves the Kisses of his careful Wife, 3
 While, skillful at the Loom the Rustic Fair 6
 The SHUTTLE throws, and weaves with nicest Care. (S) 9
 Consulting now his Books, the Student writes, 4
 And arm'd with Satyr's Quill, the Muse invites; 8
 Meantime the Sun his Rays remotely spreads,
 And gayly gilds th' æreal Mountains Heads.

Erasmus sent us the following Answer to the Ænigmas,
 done by *Salarea*.

On your Diarian Book I chancing to look 4
 Last Night, as it lay on your Table,
 I stole it to try (like others) if I
 To solve the Ænigmas was able.
 Elate with my Folly, and Kissing Miss Polly (S) 5
 I told her, that now I must leave her;
 Then crossing the TARENT, strait homeward I went, 7
 As swift as the SHUTTLE of Weaver. 9
 To my Room I retir'd, where SILENCE conspir'd 1
 To aid my Researches in vain.
 I Exad each Key, like SPIDER her Prey, 10
 True Answers attempting to gain.
 But, NETTLED to find the Muses unkind, (S) 3
 I rose up without more Delay.
 And in angry Mood (like WIFE peevish and rude) 6
 I flung my foul PEN quite away. 8
 In like manner they were answered by Mr. Sam. Bamfield, Mr. J. Sim-
 pson, Mr. J. Hollingworth, Mr. Bryan Shaw, Jerry Jinglebrains, Mr.
 J. Baily, Mr. Wm. Mobbs, Mr. A. Thorn, Mr. J. Coffer, Mr. Wm.
 Dickes, and several others, which, for want of Room, we're obliged
 (with Reluctance) to omit.

New MATHEMATICAL QUESTIONS to be answer'd in the next Year's Diary.

(1) Question 91. by Mr Tho. Moss.

'Tis required to divide a given Trapezium into two equal
 Parts (Geometrically) by the shortest Line possible?

(2) Question 92. by Mr Abraham Lord.

The Wind blowing from the East, drives a Ship due West
 at the Rate of 5 Miles per Hour. Required the Angle that the
 Plane of the Sail ought to make with the Direction of the
 Wind,

Wind, that the same Wind may drive the Ship N W. with the greatest Velocity possible: And what will that Velocity be?

(3) Question 93. by Mr *Wm Sutton* of King's Newnham.

Upon what Day in the Spring of the Year 1750, at London, will the *Medium Coeli* be in the Ecliptic at Noon (or the Sun's Longitude from Aries) nearest equal to his Distance from the Nonageſime Degree.

(4) Question 94 by Mr *William Jeſſon*.

Required two general Theorems (with their Investigations) to determine the greatest Parallelogram, and greatest Cylinder that can poſſibly be inſcribed in the Segments of an Ellipſis and Spheroid; when the dividing Ordinate is parallel to, and equal $\frac{1}{2}$ of the Conjugate Axis?

(5) Queſt. 95 by Mr *William Bevil* of Harpswell.

I have a Garden, whoſe beautiful Frame
A Parabola's Figure exactly does claim;
Now what's the Content I want for to know,
And beg you to do't by the Data below.

Given the Abſciſſa $= x^2$, Ordinate $= 3x$, and the Area of the
greatest inſcrib'd Parallelogram $= 509, 16723$ ſquare Poles.

(6) Queſt. 96 by Mr *John Dodd*.

Let ABCD be a Geometrical Square,
S, a Spring in an adjacent Field, and let
there be given the Three Diſtances SA $=$
70, SB $=$ 40, and SC $=$ 60 Chains;
from thence to find the Area and Side of
the ſaid Square?



(7) Queſt. 97 by Mr *Thomas Moſs*.

Sailing due Eaſt along Shore, I obſerved a Merchant-man
and a Privateer lying at Anchor directly Eaſt and Weſt from
me; between the North and the Eaſt I alſo obſerved a Caſtle
at the Diſtance of 8,05 Miles, whoſe Diſtance from the Mer-
chant-man was then equal to mine from the ſaid Merchant-
man; but ſailing 6 Miles farther (towards the Merchantman)
my Diſtance from the Privateer, then, became equal to that
of the Caſtle from the ſaid Privateer: It was alſo known
that the two Ships formed an Angle of 90 Degrees at the
Caſtle: From whence it is required to find, Geometrically,
their

their Distance asunder, and also my Distance from each at both Observations.

(8) Question 98. by Mr William Kingdon.

In a right angled Triangle there is given its Periphery = 16,9705626 Chains, and a Line drawn within the said Triangle parallel to the Hypotenuse dividing its Area into two equal Parts, will measure just 20 Poles; from whence are required the Area and Sides separately?

(9) Quest. 99 by Mr Charles Smith.

Given the Difference between the Areas of the greatest Parabola and Circle that can be inscribed in an Isosceles Triangle = 209,058. Required the Sides and Area of the said Triangle; the Abscissa, Ordinate, and Area of the Parabola; as also the Area of the Circle.

(10.) Quest. 100 by Mr Abraham Lord.

Suppose a Piece of tapering round Timber, whose Diameter at the Bottom is a Foot, and at the Top half a Foot, also its Length is 14 Feet, and Weight 370 Pounds. *Quære*, to what Degree of Elevation it must be raised with the greater End downward so that a Man raising it up with his Shoulder shall bear just 100 Pound Weight; supposing his Shoulder to be 5 Feet from the Ground that is level with the Bottom of the Piece of Timber.

New ÆNIGMAS to be answer'd in the next Year's Diary.

(1) ÆNIGMA 62 by Mr Samuel Hammond of Nottingham.

TO Beasts, Mines, and Trees, I owe my Increase,
To several Artists my Frame;

Which (to tell you the Truth) is a little uncouth,

As you'll own, when you've hit of my Name.

To make me compleat, as also more neat,

They pierce with their Nails my tough Skin;

Which (I tell you no Fibs) cleaveth close to my Ribs,

And lieth in Wrinkles between.

As Entrails I lack, my Belly and Back

Are flat; but withal am so strong

That many a Score of Cattle I've bore,

Which wanton'd the Thickets among.

Who

IS DOWN (taught by a Crab) had oft the Mischance
 (Being laid on my Back) to expire
 By being sore prest, until they deceas'd,
 Or else by the Heat of the Fire.
 Like the fierce Crocodile, on the Banks of the Nile,
 My uppermost Jaw has a Joint;
 Like a Vane my Snout shows which Way the Wind blows,
 As 't evermore faces that Point.
 Of my Tails (which are two) the one is bor'd thro',
 But with no ill Effect is attended;
 Tho' wrung like a Swine, with a Thong or a Twine
 By which I am often suspended.
 Like a Woodcock indeed, by Suction I feed,
 And vary, like it, with the Seasons;
 One Season respected, another neglected,
 And both for substantial Reasons.
 But (what is most strange) so subject to change,
 This Moment I'm ready to burst;
 The next I am lank, with a shrivell'd Flank,
 The third am as full as at first.
 For as the Bird *Glutton*, when gorg'd with dead Mutton,
 In a Chink gets her Body confin'd,
 Where (by Squeezes and Strains) with incredible Pains
 She thrusts out her Ordure behind,
 Then returns to her Flesh, where she gluts her afresh;
 So, when fill'd till I'm ready to spew,
 I'm squeez'd till I cast out my latest Repast,
 And, tho' breathless, am gorged anew.

(2) ÆNIGMA 63. by Sam. Squib.

Ye Artists, fond of Ænigmatic Fame,
 Explore the Truth, and tell the World my Name.
 My wondrous Birth is e'en to Time unknown,
 Or, like *Immensa Eternity*, I've none.
 When I in solemn Majesty appear,
 The silent Globe is struck with awful Fear;
 My Reign's extended over Earth, Air, and Sea,
 Even Hell beneath's not from my Power free.
 The rakish Debauchees Intrigues I screen,
 Through me th' Assassin too escapes unseen;
 Aided by me the Oracles of old,
 Did all their sacred Mysteries unfold.
 My Presence once, as *Holy Writ* doth tell,
 The *Hallow'd Mountain* did with Rev'rence fill.
 The falling Earth its Empire must resign,
 And Nature's ample Pow'r submit to mine:
 An universal Ruin rais'd my Throne,
 And Fate confirm'd my Reign for Time unknown.

(3) ÆNIGMA 64 by F. F. Mingle.

Since oft to me (so pray, my Name declare)
 You the Fair Sex, and they do you compare,

Like

Like both indeed, just first I sprung from Earth,
 But unto Art I owe my second Birth;
 Diff'rent's my Form, as he's by Fancy led
 Who makes me, with and oft without a Head.
 Some put me naked, to endure the Cold,
 Some paint me fine, some cloathe me all in Gold,
 In party-colour'd Silk sometimes I'm seen,
 With a long Train, like to an Indian Queen.
 When Nymphs and Swains, with Gambols *May* proclaim,
 I'm mostly found at th' Head of all their Game.
 At Church and Market I do oft appear,
 And have a Seat, or stand (as others) there;
 On Land alone, I am not doom'd to keep,
 But, Sailor like, I traverse o'er the Deep;
 When brave *Duke William* cross'd the raging Main
 With Arms to humble haughty *France* and *Spain*,
 With him I flew, my ancient Post maintain'd,
 And danc'd about, when he the Shore had gain'd.
 There's no Coast known, where I have not been hurl'd,
 I went with vent'rous *Anson* round the World.
 Yet after all, think it not strange to hear,
 That *Cancer* like, I always backward steer.

(4) ENIGMA 65 by *Salarea*.

Ye gentle Swains, who deign with gen'rous Care
 To guard from Harm the tender virtuous *Fair*,
 O lend your Shield, — whilst trembling I essay
 In artless Verse my Nature to display:
 I need your Aid — so delicate's my Frame,
 A Frown distorts, ill Words with Blushes shame.
 Like Virtue fated (such 's this State of Woe!)
 Rude Shocks I suffer from a Pow'rful Foe;
 A Foe, who joys my Ruin to fulfil,
 And takes a thousand diff'rent Shapes to kill.
 In Fops I meet him, Ladies of the Town,
 Coxcombs and Fools, and many a Country Clown,
 The pedant Blockhead too with him combines
 To cloud true Merit if thro' me it shines;
 And Numbers more — Oppos'd to those I prize
 The Friends of Virtue — All the Good and Wise,
 By these approv'd, I ev'ry Station know,
 And find Protection in both High and Low.
 Yet most Retirements, rural Sweets I choose,
 A fond Companion to the Fair One's Muse.
 Sometimes indeed I charm the public View,
 And mount with new-made Priest the Pulpit too;
 And once (known Tale) to Senate-house I came,
 United closely to a Bard of Fame;
 With him I rose (without Corruption's Fee)
 But all his Eloquence was drown'd in me.
 Fatal Excess! it wounds my very Frame,
 And oft from thence I take a silly Name;

Till then I plead the anxious Lover's Suit,
And rising then, thro' me he's made quite mute.
Whilst glad Success awaits my hated Foe,
To crown his Vassals — ev'ry Fool and Beau.

Ill judging Age! — For know, discerning Swains,
(If e'er you felt a faithful Lover's Pains)
Know and confess, when you *Amanda* see,
That she a thousand Charms receives from me;
To each dear Feature I new Grace impart,
And fix the Wound in her *Erastus'* Heart:
'Tis mine, to make her Wit with Lustre shine,
'Tis mine, to make her Character divine.
Enough! no longer I'll your Time employ,
For boasting thus my Nature I destroy.

(5) *ÆNIGMA 66* by Mr *Ralph Hulse*.

Sages, within a Court I reign,
Maintain'd by Heav'nly Rights;
While *Faith* and *Love* point out my Paths,
Hope charms with fond Delights.
From humble Vales, I soar aloft
To Pleasure's highest Pitch;
Tho' mean, from all obtain Applause;
Tho' poor, myself deem rich.
A spotless Conscience is my Throne,
Religious Thoughts my Rest:
Thus happy am within myself,
Tho' like a *Pauper* dress'd.
Well pleas'd at all Times, I account,
A mean, the surest Lot;
That lyes too high for base Contempt,
Too low for *Envy's* Shot.
My Wishes are but very few,
All easy to fulfil;
I make the Limits of my Pow'r
Obsequious to my *Will*.
I take no Care in hoarding Coin,
Good Actions are my Wealth;
My Mind to me an Empire is
Whilst Grace bestoweth Health.
Sages, pluck off the *Mask*, I pray,
I wish you all Success;
Without me none can happy be,
Or hope for Happiness.

(6) *ÆNIGMA 67* by Mr *Sam Hammond* of Nottingham.

In *Paradise* my chearful Reign began,
To frustrate *Satan*, and to comfort Man;
Tho' weak my Pow'r for Ages, till at length
I from the *Law* and *Prophets* gather'd Strength.
Yet almost then confin'd to *Earthly* Things,
But soar aloft on *Contemplation's* Wings
E'er since the coming of the *King of Kings*.

Of whom as *Moses* was a *Type*, so I
 Of *Moses* am; for from worse *Slavery*
 Than *Egypt's King* inflicted, I set free;
 Thro' th' *Wilderness* of *Life* triumphantly
 Conduct the *Faithful*; and within the *Vision*
 Of *Spiritual Canaan* bid them all *Adieu*!

(7) ENIGMA 68 by *Nat. Fawcett*.

Because I am by Nature blind,
 I wisely chose to come behind;
 However, to avoid Disgrace,
 I let no Creature see my Face.
 My Words are few, but spoke with Sense;
 And yet my speaking gives Offence:
 Or, if to whisper I presume,
 The Company will fly the Room.
 By all the World I am oppress'd,
 And my Oppression gives them Rest.

Through me, tho' fore against my Will,
 Instructors ev'ry Art instill:
 By Thousands I am sold and bought;
 Who neither get, nor lose a Groat;
 For none, alas! by me can gain,
 But those who give me greatest Pain.
 Shall Man presume to be my Master,
 Who's but my *Caterer* and *Taster*?
 Yet, tho' I always have my Will,
 I'm but a mere *Depender* still:
 An humble Hanger-on at best;
 Of whom all People make a Jest.

In me, Detractors seek to find
 Two Vices of a different Kind:
 I'm too profuse, some Censurers cry,
 'Cause all I get, I let it fly:
 While others give me many a Curse,
 Because too close I hold my Purse.
 But this I know, in either Case
 They dare not charge me to my Face.
 'Tis true, indeed, sometimes I save,
 Sometimes run out of all I have;
 But when the Year is at an End,
 Computing what I get and spend,
 My Goings out, and Comings in,
 I cannot find I lose or win,
 And therefore, all that know me, say
 I justly keep the middle Way.
 I'm always by my Betters led;
 I last get up, am first a-bed;
 Tho', if I rise before my Time,
 The Learn'd in Sciences sublime
 Consult the Stars, and thence foretell
 Good Luck to those with whom I dwell.

A REXUS by *Nehemiah Noonhead Esq.*

To the Way to make Iron from Ore
 Let be set a Denial revers'd,
 And the Name of a Town 'twill explore,
 In the County of *Leicester* express'd;
 But, to make the Thing further appear,
 Add the Way to reap Barley or Grass,
 And all Notes of the Town will be clear,
 When set to the Tune of an Ais.

PARADOX I. by *Mr Hammond.*

I'm neither Man, Beast, Fish, nor Bird,
 Insect or Reptile none;
 Yet live and breathe, tho' (on my Word)
 My Origin is Bones.
 As soon as you have found my Name,
 All Doubt will disappear;
 Then fail not to reveal the same
 Unto the World next Year.

PARADOX II. by the same.

I was To-morrow, but am not To-day;
 Yet shall be Two Days past: my Name display.

An *Alphabetical Catalogue* of CONTRIBUTORS to this
 Diary, shewing by the Numerical Letters i, ii, iii,
 &c. which Quest. and by 1, 2, 3, 4, &c. what
 Ænigmas each answered.

Mr. Tho. Allen all but ii, iii, iv. Ecl. and first Par. Miss Air all Æ.
Academicus all but iv. *Amanuensis* jun. i, ii, iv, ix, and x. Mr. Rich.
 Abbot all but ii, v, x, in Verse, Prop. i. Mr. Sam. Bamfield all Æ. in
 Verse, prop. 1 Æ. Mr. Will. Bevil 5 and 9. prop. 3 Q. and 1 Par. Mr.
 Ralph Brocksopp 9. all Æ. and prop. 1 Q. Miss Pally Bright all Æ. in V.
 Mr. John Baily all Æ. in Ver. prop. 1 Æ. Sam Bravo all Æ. in Verse.
 Mr. Peter Broomshanks 1, 2, 5, 9 and 10, all Æ. in Verse. Mr. John
 Chester all Æ. in Verse. St. Chad all Æ. in Ver. prop. 2 Q. Miss Col-
 lifson both Par. prop. 1. Mr. Cha. Crampton 1, 2, 9, and all Æ. Mr.
 Lbretwelen Davis 1, 2, 3, 5, and 9. Mr. J. Dennis 1, 3, 5, 6, 9, 10.
 Mr. Benj. Donn all Q. i, iv, vii, viii, ix. Ecl. prop. 2 Q. and 1 Par.
 Miss Dolly all Æ. in Ver. Mr. Will. Dickes all Æ. in Ver. prop. 1 Æ.
 Mr. Sam. Donn Ecl. Dorothy Dalrimple all Æ. both Par. Dick Down-
 right 1, 4, all Æ. The Doctor all Æ. in Ver. Erasmus all Æ. in Ver.
 prop. 1 Æ. Miss Egington all Æ. Frank Eldergill 1, 2, 4, 6, 9, all
 the Eclipses. Emblematical all Æ. Mr. Francis all Æ. Miss Fickle
 all Æ. in Verse. Capt. Frew all Æ. in Verse. Mr. Tho. Garrard 4,
 7, 8, 9. Geo. Goodall 4, 7, 9, 5, all Æ. in Verse. Gammer Garten all
 Æ.

Æ. and 1 Par. *Tom. Gosling* all *Æ.* *Mr. John Hollingsworth* 1, 2, 4, all *Æ.* in Verse, 1 Par. in Verse, the Eclipses, prop. 1 Par. *Mr. Tho. Hare* 1, 5, 9, all *Æ.* first Par. *Miss Hill* all *Æ.* but vi. *Molly Ham- leys* i, ii, iii, v, x. *Miss Nancy Hemingway* all *Æ.* in Ver. *Mr. Basil Hern* prop. 1 *Æ.* *Mr. Will. Heaford* all *Æ.* but iii and vi, prop. 1 *Æ.* *Mr. Sam. Hammond* all *Æ.* in Verse, prop. 3 *Æ.* and 2 Par. *Mr. Will. Jepson* 5, 6, 9, all *Æ.* prop. 2 Q. *Mr. Jos. Jackson* all *Æ.* in Verse. *Jery Jinglebrains* all *Æ.* and both Par. in Verse. *Miss Jenny* all *Æ.* *Miss Knapton* all *Æ.* in Verse. *Kind Kitty* i, ii, iii, iv, vi, x. *Mr. Will. Kingston* all Q. and all *Æ.* prop. 2 Q. *Mr. Abi. Lord* all but 3, all *Æ.* but ii, iii, and vi, both the Eclipses, prop. 5 Q. *Lucinda* all *Æ.* in Ver. *Lucy Lovejoy* all *Æ.* *Mr. Lashmar* first Par. prop. 1 *Æ.* *Ned Langley* 1, 2, 7, all *Æ.* *Capt. Mary* all *Æ.* in Verse. *Mr. Tho. Moss* all Q. prop. 2 Q. *Mr. Cha. Mason* jun. all the Eclipses, with the Transit of *Mercury* over the Sun's Disk for the Year 1753, prop. 1 *Æ.* *Mr. Will. Mitchel* 9. *Mr. Rob. Matlack* all *Æ.* in Verse. *Mr. Will. M.* prop. 1 Q. *Mr. James Mayo* both Par. in Verse, prop. 1 *Æ.* *F. F. Mingle* all *Æ.* prop. 1 *Æ.* *Mr. Will. Mobbs* all *Æ.* in Ver. prop. 1 *Æ.* *Miss Nancy* all *Æ.* *Oberon* all *Æ.* *Mr. John Peachey* 4, 5, 8, vii, ix, both Par. prop. 1 Q. *Politicus*, all, all. *Mr. Rich. Powel* all *Æ.* but iii and vi, the Eclipses. *Mr. John Randles* 6, ii, iii, iv, viii, prop. 1 Q. 1 *Æ.* and 1 Par. *Mr. Rob. Robinson* all Q. but 10. Eclipses. *Gamston Reesford* prop. 3 Q. in *Æ.* *Mr. John Ramsay* i, iii, vii. Ecl. prop. 2 *Æ.* *Young Roger* all *Æ.* *Old Rusticus* all *Æ.* prop. 1 *Æ.* *Mr. Will. Sutton* 2, 4, 7, 8. Eclipses, prop. 1 Q. and 1 Reb. *Mr. Rich. Sbillito* prop. 1 *Æ.* *Salareu* all *Æ.* in Verse, prop. 1 *Æ.* *Mr. Cha. Smith* all the Q. but 10. prop. 2 Q. *Mr. Paul Sharp* 4, 5, 6, 7, 9, 10. all *Æ.* and prop. 1 Q. *Mr. Wall. Spicer* 1, 4, 5, 7, 8, 9, 10. i, vii, viii, ix, x, and both Par. *Mr. John Skey* Eclipses, prop. 1 *Æ.* *Mr. John Simpleton* all *Æ.* in Verse, both Par. in Verse, prop. 1 *Æ.* *Mr. Sixfoot* all *Æ.* but iii and vi, prop. 1 *Æ.* and 1 Par. *Mr. Sam. Sector* Eclipses. *Bryan Shaw* all *Æ.* in Verse, prop. 1 *Æ.* *Mr. Nich. Styles* i, ii, iii, vii, viii, ix, and first Par. in Verse. *Sam. Squib Esq.* all *Æ.* in Verse, prop. 1 *Æ.* *Mr. John Todd* 1, 4, 5, 7, 8, 9. prop. 1 Q. *Timothy Thickscull* all *Æ.* in Lat. Verse, prop. 1 *Æ.* *A. Thorn* all *Æ.* in Verse. *Vulpes* all, all. *Urania* Ec- lipses. *Mr. T. Ward* 9. *Mr. W—m W—db—m* 5, 9. i, ii, iv, vii, viii, ix. *Mr. James Walker* 3, 5, 8, 10, all *Æ.* but iv and vii, Eclipses. *Mr. Roger Widger* 2, 4, 8. all *Æ.* *Mr. John White* 1, 9. *Wiltshire* i, vii, viii, ix, x. first Par. prop. 2 *Æ.* and 1 Par.

F I N I S.

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